AD 633632

PROPELLER, INTEGRAL GEARBOX
MODEL 73EGB1
AND
PROPELLER, VARIABLE CAMBER
MODEL VC86260
FLIGHT TEST REPORT

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BUREAU OF NAVAL WEAPONS CONTRACTS
NOw 64-0635-di
NOw 65-0533-d

June 30,1966

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ABSTRACT

This report describes the preparations for, and the 50 hour flight tests of, the 73EGB1 Integral Gearbox Propeller and the VC86260 Variable Camber Propeller conducted under Bureau of Naval Weapons Contracts NOw 64-0635-di and NOw 65-0533-d.

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SUMMARY

A 50 hour flight test was conducted on both the 73EGB1 and VC86260 propellers. These tests were conducted on the United Aircraft Corporation B-17G test bed aircraft which was removed from long time storage and reconditioned. A 73EGB1 gearbox was modified to a shaft configuration for use in the VC86260 propeller flight test. Development tests and a 50 hour engine PFRT were conducted on this gearbox. Both test propellers and gearboxes were assembled primarily from hardware used in development testing programs on the 73EGB1 and VC86260 propellers. In general, both propellers performed satisfactorily during their respective tests.

INTRODUCTION

The 73EGB1 propeller was developed under Navy Contract NOw 60-0556-d to the point where it was considered capable of passing a 50 hour PFRT engine test. A 50 hour PFRT engine test was then successfully conducted under Navy Contract NOw 64-0642-d.

The VC86260 propeller was developed under Navy Contract NOw 62-0649-d. Development of this propeller included a 50 hour engine PFRT and a whirl stand PFRT.

Late in 1964, Hamilton Standard received Bureau of Naval Weapons Contract NOw 64-0635-di to conduct the preparatory phase of the flight test and in mid-1965 Bureau of Naval Weapons Contract NOw 65-0533-d was received to conduct the flight test of the 73EGB1 and VC86260 propellers.

OBJECT

This test program was conducted to evaluate the performance and endurance capabilities of the 73EGB1 and VC86260 propellers during 50 hour flight tests.

CONCLUSION

It is concluded that the 73EG81 and VC86260 propellers demonstrated satisfactory performance and endurance characteristics during the flight test program.

RECOMMENDATION

None.

PREPARATORY PHASE

The preparations for the flight test were conducted under Bureau of Naval Weapons Contract NOw 64-0635-di. This phase consisted of two major areas of effort.

Aircraft

The aircraft used as the flying test bed was a Boeing B-17G modified to accept a fuselage nose mount nacelle. Figure 1, Appendix A is a photograph of the airplane at the start of modification for this test. When reactivated for this test, the aircraft had been in storage for two years and had not flown for five years.

The airframe provides a four point mounting adapter for the test nacelle as shown in Figure 2, Appendix A. This photograph also shows the firewall and the exhaust duct for the T64-GE-1 engine used during this test program.

The nacelle structure designed and fabricated for this test consisted of a two-section tubular steel frame. Figure 3, Appendix A is a photograph of the frame, with a gearbox mock-up installed, on an assembly jig. The frame supported the engine, gearbox-propeller, paneling, air inlet duct, oil tank, engine and propeller input systems, and instrumentation.

The air inlet duct designed and manufactured for the installation was subjected to an engine test to insure that the circumferential distortion of the air across the engine compressor face was within the limits set forth by the engine manufacturer. This test revealed the duct to be satisfactory for use on the test installation. Figures 4 and 5, Appendix A show the air inlet duct installed in the test house for evaluation.

The test installation was operated from a control station in the bomb bay area of the aircraft. This station is shown in Figure 6, Appendix A.

Data was recorded by oscillograph, Figure 7, Appendix A, and on a photo panel, Figure 8, Appendix A.

Figure 9, Appendix A, is a photograph of the left side of the test installation, Figure 10, Appendix A, is a photograph of the test installation from underneath, and Figures 11 and 12, Appendix A are photographs of the right side of the test installation. All photo's are of the test installation for the 73EGB1 propeller.

Aircraft - (continued):

In addition, to the manufacture and installation of the test nacelle, it was necessary to recondition the aircraft for relicensing. This included the depreserving of the aircraft, refabricing of the control surfaces, and the procurement and installation of new radio equipment to conform to the new FAA requirements. The aircraft was licensed for day VFR by the FAA. Figure 13, Appendix A is a photograph of the aircraft with the 73EGB1 propeller, ready for flight, and Figure 14 Appendix A is a photograph of the VC86260 propeller installation ready for flight.

SK56029 Speed Reduction Gearbox

The SK56029 Speed Reduction Gearbox is the same gearbox used in the 73EGB1 Integral Gearbox Propeller, modified to a shaft type configuration. Figures 15 and 16, Appendix A are photographs of the gearbox in an assembly stand. The unit is designed to accommodate a T-64 engine of 3180 HP military rating at 15,600 rpm. Maximum input speed and torque for the gearbox are 17,000 rpm and 1200 ft-lb. The gear reduction ratio is 12.08:1.

To modify the 73EGB1 gearbox to the SK56029 configuration, the following changes are necessary:

1. Replacement of the propeller tail shaft with a propeller mounting shaft in accordance with AND 10152-60A.

2. Replacement of the propeller control with a transfer bearing to provide the gearbox lubricating oil.

3. Addition of a control torque retainer.

The configuration of the SK56029 gearbox used for this test is defined by Model Specification No. 5067. This unit, S/N GB 104, consisted mainly of parts used during the static structural testing of the 73EGB1 propeller. New parts were incorporated to obtain the shaft type configuration or where dictated by normal test procedure. A VC86260 Variable Camber Propeller was used to load the gearbox, and a T64-GE-1 engine was used as the power source.

A short development test was run on the SK56029/VC86260 configuration to determine their compatiability, and to evaluate the functional and structural suitability of the gearbox to perform the 50 hour PFRT. This test was conducted in the Hamilton Standard "E" engine test cell and consisted of 37 hours, 25 minutes of running. Operation was checked in both steady state and transient conditions. No problems were encountered during this test, and the gearbox was considered to be satisfactory for subjection to the 50 hour PFRT.

SK56029 Speed Reduction Gearbox (continued):

The 50 hour PFRT engine test of the SK56029 gearbox was conducted in accordance with paragraph 4.5.2 of MIL-P-26366A. The test was run in the Hamilton Standard "E" engine test cell. The test cell incorporates a horizontal intake with a variable cone orifice and a vertical exhaust. Control apparatus and test instrumentation were housed in a room overlooking the test cell. Figure 17, Appendix A is a photograph of the test cell with gearbox/propeller installed and Figure 18, Appendix A is a photograph of the control room. Two levers mounted . a quadrant in the control room were used to control engine and prop ler operation. One lever, the condition lever, was used to set propeller governing speed and to provide a manual feather signal to the propeller control. The second lever, the power lever, was used to control engine power through input to the fuel control and also, through an electric switch located on the quadrant and a solenoid located on the test stand, to provide a reversing signal to the propeller control. A switch located on the propeller control panel provided electrical feather and unfeather signals to the propeller control.

Instrumentation used to monitor the required engine, gearbox, and propeller parameters is tabulated in Figure 22, Appendix A.

Prior to initiating the test, the gearbox was completely disassembled and laid out for inspection by Hamilton Standard Engineering and by Hamilton Standard and Government Quality Control. At that time all indications of abnormal wear were noted on the pre-test inspection record and any necessary part replacements were made. The gearbox was then assembled per Hamilton Standard Specification HS 1455.

Testing, as specified by paragraph 4.5.2 of MIL-P-26366A, consisted of propeller performance tests prior to and following endurance running, and endurance testing consisting of 50 one-hour flight cycles. Plan of Test 128PT-89 describes in detail the test procedure used for the 50-hour PFRT. This Plan of Test and log sheets covering the test are contained in Appendix B.

Following the testing, the gearbox was again disassembled and laid out for inspection. All conditions of abnormal wear not noted on the pre-test inspection record were then noted on the post-test inspection record. Copies of both pre-test and post-test inspection records are contained in Appendix B.

Gearbox operation throughout the test was excellent. There were no instances of chip detector shutdowns or abnormal vibration indications.

Propeller operation during the test was satisfactory, with no unusual incidents occurring.

Post-test examination of the gearbox revealed the detail parts to be in good condition.

It was concluded that the SK56029 gearbox had demonstrated satisfactory endurance characteristics during the test, and was qualified for flight testing.

DESCRIPTION OF TEST

The flight phase of the program was conducted under Bureau of Naval Weapons Contract NOw 65-0533-d. This phase was conducted in two parts.

The first part was a 50-hour flight test of the 73EGB1 Integral Gearbox Propeller. This test was conducted primarily to evaluate the airworthiness of the gearbox. The second part was a 50-hour flight test of the VC86260 Variable Camber Propeller installed on a modified 73EGB1 gearbox.

73EGB1 Propeller

The 73EGB1 propeller is an integrated unit consisting of hub, control, and speed reduction gearbox. The hub is similar to the Hamilton Standard 63E60 propeller hub, but with the rear barrel half modified to provide a tailshaft for assembly with the gearbox and the fluid transfer system modified to accommodate oil flow to the hub from the rear mounted control. The control, mounted at the aft end of the gearbox, is functionally similar to the 53C51 propeller control now in service on the AO-1 aircraft. The main feature which distinguishes the 73EGB1 from previous Hamilton Standard propellers is the integrated gearbox. This unit is designed to accommodate a T64 engine of 3180 HP military rating at 15,600 rpm. Maximum input speed and torque for the gearbox are 17,000 rpm and 1200 ft-lb. Gear reduction ratio is 12.08:1. Complete descriptions of the 73EGB1 propeller may be found in the Hamilton Standard Model Specification No. 3704B, the Hamilton Standard 73EGB1 Propeller Development Report No. HSER 2789, and the Hamilton Standard 73EGB1 50-hour PFRT Report No. HSER 3407.

The configuration of the 73EGB1 propeller used for this test was essentially the same as that used for the 50-hour PFRT. Minor modifications were made to incorporate a 63E60 spinner and an instrumentation flight ring. This unit consisted mainly of parts used during development testing.

VC86260 Propeller

The VC86260 propeller consists of a hub and a control. The hub differs from other Hamilton Standard hydromatic propellers in that it has a tandem, or two-stage arrangement of blades with a means for varying the blade angle schedule between the forward and rear blades. This arrangement permits the forward and rear blades to act as one to achieve the effect of a high camber blade for take-off and, by differential pitch change, to revert to a low camber staggered biplane arrangement for cruise. The control is essentially the same as the 63E60 propeller control with minor modifications to make it compatible with the propeller.

VC86260 Propeller (continued):

This unit is designed to accommodate a T64 engine with a 2765 HP take-off rating at 1160 rpm. A complete description of the VC86260 propeller may be found in the Hamilton Standard Model Specification No. 5006A.

The configuration of the VC86260 propeller and SK56029 gearbox used for this test were essentially the same as that used for their respective 50-hour PFRT's. Minor modifications were made to incorporate an instrumentation flight ring. This unit consisted mainly of parts used during development testing.

Test Method

The testing was conducted on the nose mounted nacelle of the modified B-17G aircraft. The test installation was controlled from a panel in the aircraft bomb bay area. Instrumentation used to monitor the required propeller and engine parameters is tabulated in Figure 23. Oscillograph recording equipment was employed where necessary for determining propeller performance versus time and to record blade stresses during the vibration stress survey portions of the testing. A photo panel was used to continuously record critical installation parameters.

Prior to and at the conclusion of testing, the propellers were completely disassembled and laid out for Hamilton Standard Engineering inspection. Assembly of the test units was then conducted in accordance with their respective specifications. A brief engine check out of each unit was then performed prior to installation on the aircraft.

Testing of each propeller consisted of ground and flight vibration surveys, ground and flight performance tests, operation under unusual attitudes, taxi tests, and endurance cycles. Plans of Test No's. 128PT-90 and 128PT-91 describe in detail the test procedures used for the 73EGB1 propeller, and Plans of Test No's. 128PT-93 and 128PT-94 describe in detail the test procedures used for the VC86260 propeller.

Test Chronology

A chronological order of test is presented in Figure 24 Appendix A for the 73EGB1 propeller and in Figure 25 Appendix A for the VC86260 propeller.

DISCUSSION

General

Testing was conducted in accordance with the plans of test within the limits of aircraft and test engine capabilities. Maximum airspeed was established as that speed which could be maintained with the aircraft engines at maximum cruise power and the test engine at idle power. This airspeed varied from 240 mph indicated at 5000 feet to 165 mph indicated at 30000 feet. Maximum attitudes attainable were 45° about the roll axis, 25° about the pitch axis, and zero "g". Attempts to run a negative "g" condition were discontinued when oil pressure was lost on all engines during this maneuver.

Ambient temperatures observed during the test ranged from + 24°F to +54°F on the ground and +45°F to -46°F during flight.

Engine power was altitude limited. Take-off power could be obtained up to approximately 11,000 feet, and at 30,000 feet 60% normal rated power was the maximum attainable.

During both the 73EGB1 and VC86260 portion of the test, the aircraft was flown for a short period of time with the reciprocating engines shut down. Figure 19 Appendix A is a photograph of the aircraft in flight with the 73EGB1 propeller, and Figure 20 Appendix A is a photograph of the aircraft in flight with the VC86260 propeller. Figure 21 Appendix A is a photograph of the aircraft in flight with the VC86260 propeller feathered.

73EGB1 Integral Gearbox Propeller

Vibration Stress Survey

The propeller stress survey indicated that both bending and shear blade stresses were well within acceptable limits over the envelope of test conditions. A summary of the vibration stress levels is presented in Figure 26 Appendix A. These findings confirmed data obtained previously by Hamilton Standard on similar blade/hub configurations. The 73EGB1/6903-14 propeller was concluded to be satisfactory, from a blade vibratory stress standpoint, for continuous operation on the aircraft at the specified flight test conditions.

Nacelle Temperature Survey

The nacelle temperature survey, conducted in accordance with 128PT-90, revealed that temperatures in the engine, propeller-gearbox, and nacelle area were well within the limits set forth by both the engine manufacturer and Hamilton Standard over the range of test conditions. A tabulation of the measured temperatures is presented in Figure 27 Appendix A.

DISCUSSION (continued):

Propeller Performance

The propeller exhibited satisfactory performance throughout the test. No problem areas were encountered over the range of altitude, airspeed, temperature, and attitude flown. Steady state governing was good during all phases of the test. Propeller response to power and/or condition lever transients was also good during the program. A tabulation of pitch change rates and blade angle changes for various altitudes, airspeeds, power, and propeller speeds is shown in Figures 28 and 29 Appendix A.

Electrical feathering and unfeathering operation was marginal during the early portion of the test. Various changes were made to the oil system without significant improvement in auxiliary pump operation. These changes included revision of the plumbing between the oil tank and the gearbox to disassociate the auxiliary pump inlet line from the propeller control oil line, and changes to the oil tank vent line to provide a slight pressure head on the tank. The pump was then replaced with a new one, and electrical feathering and unfeathering was excellent for the remainder of the test. A tabulation of both electrical and mechanical feathering and unfeathering times for various altitudes and airspeeds is presented in Figure 30 Appendix A.

Propeller reversing operation was satisfactory during the taxi tests. A tabulation of reversing times from various powers at varying speeds is presented in Figure 31 Appendix A.

Attitude Checks

Gearbox/propeller operation was evaluated to the design limits of the unit as limited by the aircraft. Operation of the unit was satisfactory over the range of attainable attitudes. Propeller governing was unaffected by changes in attitude. Gearbox oil outlet temperatures were monitored closely during this check. A tabulation of temperature rise versus attitude is shown in Figure 32 Appendix A.

Flight Cycles

The propeller/gearbox was subjected to a total of 18 one-hour flight cycles. Each cycle consisted of a 15 minute climb, 30 minutes of level flight, and a 15 minute descent. This cycle was designed to approximate the conditions the unit would be subjected to in service. During these cycles, the oil inlet temperature to the gearbox was varied from 100°F to 215°F. No problems were encountered during this portion of the test.

Propeller Endurance

During the test three incidents of propeller malfunction occurred.

As discussed in a previous section of this report, electrical feathering and unfeathering action was marginal until the auxiliary pump was replaced. The original pump had been used during the development test of the propeller,

DISCUSSION (continued):

and had accumulated an unknown amount of time. It is felt that the feathering/unfeathering problem was a result of a partially worn out pump.

During ground run 6, the propeller brake was badly damaged by being partially actuated while the ground run was in progress. This was a result of a slight pressure trapped in the brake actuation system. The actuation system was reworked to provide a more positive means of venting to preclude this situation and no further problems were experienced with the brake.

During ground run 14, oil was found leaking from the propeller in the blade to barrel seal area. The propeller was disassembled on the aircraft for examination. It was found that the teflon strip cemented to the blade shank, for the blade packing to ride on, was loose. This problem was a result of improper preparation of the blade for assembly of the teflon strip. The blades were repaired, by installing new teflon strips, and reinstalled in the propeller. No further incidents of leakage occurred for the remainder of the test. Post test inspection of the hardware did not reveal any evidence of abnormal wear or distress in any areas of the propeller or gearbox.

VC86260 Variable Camber Propeller

Vibration Stress Survey

The propeller stress survey indicated that both bending and shear blade stresses were acceptable for all conditions tested. The summary data from the survey is presented in Figures 38 through 61 Appendix A. Figures 38 through 51 Appendix A show the data obtained during static ground running. The stress levels are well within limits for all conditions tested. It will be noted that the midblade stresses tend to increase momentarily at a frequency of two times propeller speed (2P) during reverse transients. (Reference Figures 44, 45, 50, and 51 Appendix A). This increase occurs because as the rpm decreases momentarily during the reverse cycle the propeller speed approaches or passes through the resonant speed for the 2P first flatwise mode of the blade.

The high propeller vibration noted at idle power in ground run 9 is felt to be a result of the propeller being at the 2P resonant speed with a high crosswind component. This would tend to excite the aircraft, and test installation mounting structure with a whirl excitation at a frequency of 3P. This could result in an appreciable motion of the engine and airframe particularly if the excitation frequency were close to a resonant frequency of the power plant and/or airframe. There are no measured or analytical data available to confirm that such a relationship between excitation and resonance frequencies existed on this installation, however the fact that increasing propeller speed would stop the vibration tends to substantiate this theory.

DISCUSSION (continued):

Data obtained during taxi tests are presented in Figures 52 through 55 Appendix A. These runs cover reverse-unreverse transients from forward powers ranging from idle to take-off. Again the stress levels are acceptable.

Data obtained during steady-state flight conditions are presented in Figures 56 and 57 Appendix A. It will be noted that these stress levels are extremely low which would be expected for an installation of this sort where the propeller is essentially isolated in an airstream and the thrust line inclination is small.

Figures 58 through 61 Appendix A present data obtained during yaw maneuvers at various indicated airspeeds. This data must be evaluated on a qualitative basis since a precise means for measuring yaw angle was not available. While the stress levels are low it is readily apparent that the rear blades are much less sensitive to 2P excitation due to angular inflow than are the front blades. This condition was indicated by some very limited data obtained in early wind tunnel model tests but the reason for this loading split and its relation to blade angle and/or airspeed are not now completely understood.

The VC86260/2FD14A3-6 & 2FE14A3-6 was concluded to be satisfactory from a blade vibratory stress standpoint for continuous operation on the aircraft at the specified flight conditions.

Nacelle Temperature Survey

The nacelle temperature survey, conducted in accordance with 128PT-93, revealed that temperatures in the engine, propeller, gearbox, and nacelle area were well within the limits set forth by both the engine manufacturer and Hamilton Standard over the complete range of test conditions. A tabulation of the measured temperatures is presented in Figure 33 Appendix A.

Propeller Performance

The propeller exhibited satisfactory performance throughout the test. With two exceptions, no problem areas were encountered over the range of altitude, airspeed, temperature, and attitude flown. Steady state governing was acceptable during all phases of the test. A tendency for the propeller to increase speed as the airspeed or altitude increased was noted. Propeller response to condition lever transients was satisfactory during the program. Propeller response to power lever transients was satisfactory except that transients from idle to take-off power would result in a higher than desired overspeed of approximately 150 rpm. A tabulation of pitch change rates and blade angle changes for various altitudes, airspeeds, powers, and propeller rpm's is shown in Figures 34 and 35 Appendix A.

Both the rpm increase problem and the overspeed problem were felt to be the result of a higher than desired hysteresis band in the propeller governing system. During the development running of the SK56029 gearbox, it was found that the hysteresis band of the VC86260 propeller was approximately

DISCUSSION (continued):

± 30 propeller rpm wide. From a set speed, it was possible to change propeller speed up to 30 rpm before the propeller blade angle would change to correct the offspeed. This is analogous to the increase in propeller rpm with increases in aircraft speed or altitude, since a change in blade angle is necessary to keep rpm constant if airspeed or altitude change and the only input to the propeller, for this blade angle change, is an rpm offspeed signal. Since the VC86260 propeller was not particularly sensitive to small rpm offspeed signals, the rpm change with altitude and airspeed was large enough to be easily noted. The excessive rpm overshoot on idle to take-off power lever transients was also a result of this governing system hysteresis. Examination of the oscillograph records taken during these power lever transients showed that blade angle did not start to increase until the propeller was in a slight overspeed condition. When the blade angle did start to increase, the pitch change rate was quite rapid as can be seen in Figure 35 Appendix A. However, because of the amount of blade angle change necessary during this transient, the overspeed reached approximately 150 rpm before the blades had increased pitch sufficiently to absorb the engine power. This overspeed was well within the structural limits of the propeller.

Feathering and unfeathering operation was good throughout the program. A tabulation of both electrical and mechanical feathering and unfeathering times for various altitudes and airspeeds is presented in Figure 36 Appendix A.

Propeller reversing operation was satisfactory during the taxi tests. A tabulation of reversing times from various powers at varying speeds is presented in Figure 37 Appendix A.

Attitude Checks

Propeller operation was evaluated at various attitudes to the design limits of the assembly, as limited by the aircraft. Operation of the unit was satisfactory over the range of attainable attitudes. Propeller governing was unaffected by changes in attitude about the roll and yaw axes. Rotation about the pitch axis did result in changes in propeller speed as discussed under propeller performance.

Flight Cycles

The propeller was subjected to a total of 33 one-hour flight cycles. Each cycle consisted of a 15 minute climb, 30 minutes of level flight, and a 15 minute descent. During these cycles, the oil inlet temperature to the gearbox was varied from 100°F to 215°F. No problems were encountered during this portion of the test.

Propeller Endurance

During the test there was one incident which required propeller disassembly and hardware replacement. This incident occurred during ground run 5 when the propeller would not increase pitch without the use of the auxiliary

DISCUSSION (continued):

pump. Disassembly of the propeller control revealed the steel rotating sleeve had "picked up" on the babbitt lined rotating sleeve allowing high pitch pressure to drain directly to the pressurized sump. Investigation revealed that the rotating sleeve did not include a change which should have been incorporated to improve its pressure balance. The rotating sleeve was reworked to this change, and with a new stationary sleeve assembled in the control. No further problems were experienced with the propeller or control.

Post test inspection of the hardware did not reveal any evidence of abnormal wear or distress in any areas of the propeller or gearbox.

APPENDIX A

AIRCRAFT AT START OF MODIFICATION

(Negative No. X15587)

FIGURE 1

AIRCRAFT MOUNT FOR TEST NACELLE

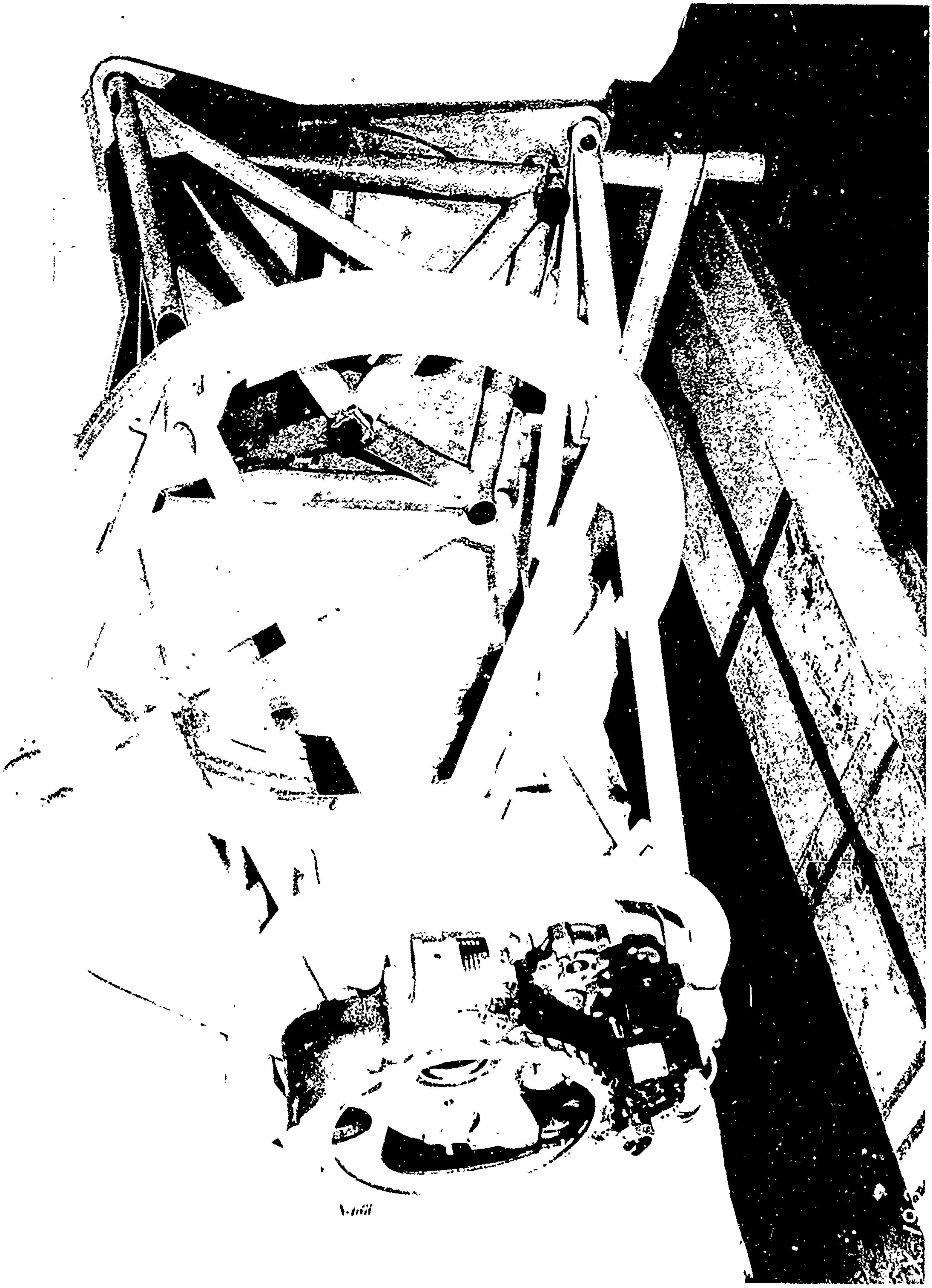
(Negative No. X15586)

FIGURE 2

TEST NACELLE STRUCTURE ON ASSEMBLY JIG

(Negative No. X19369)

FIGURE 3



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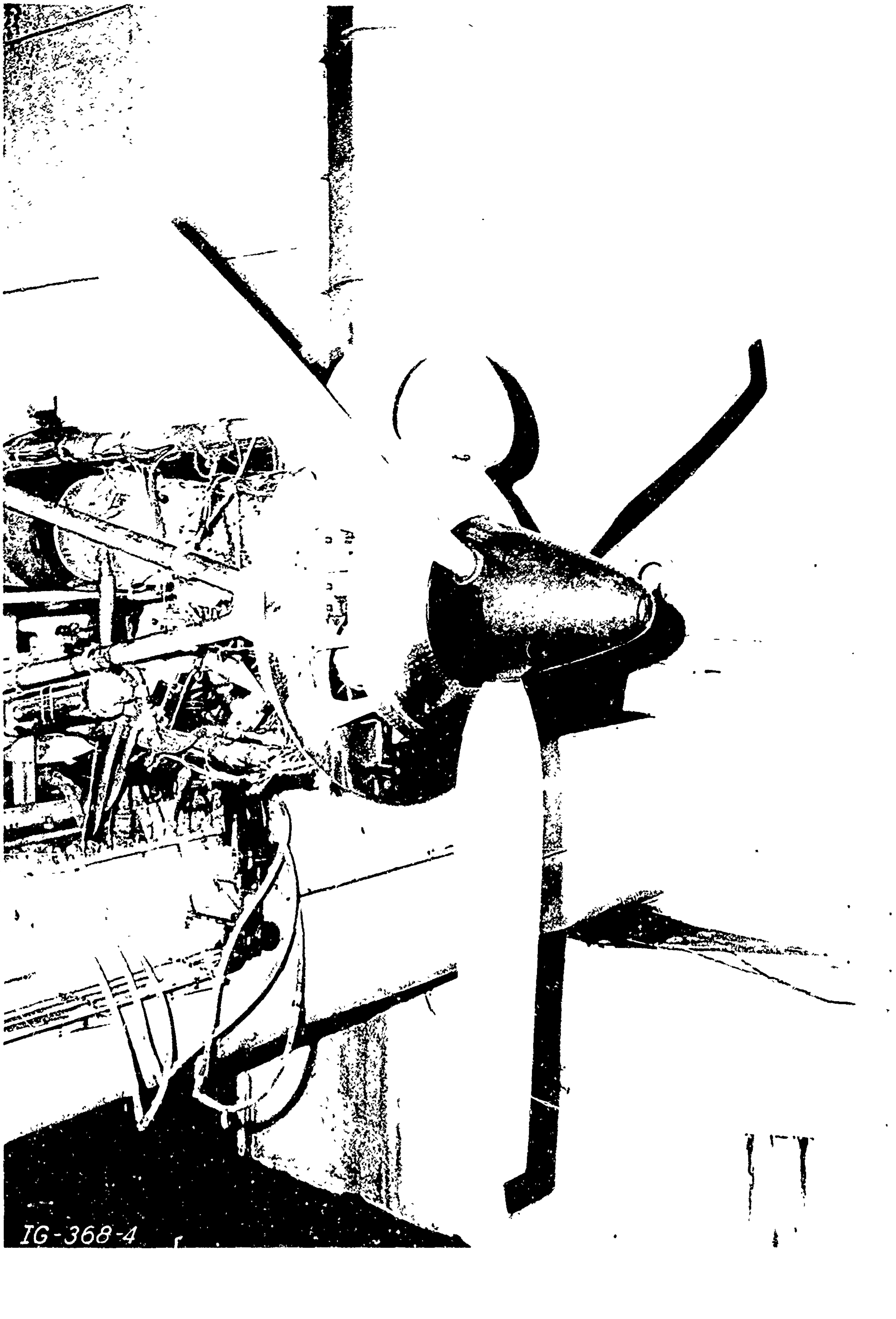
73EGB1 PROPELLER MOUNTED IN "E" TEST CELL
FOR INLET DUCT TEST

(Negative No. IG368)

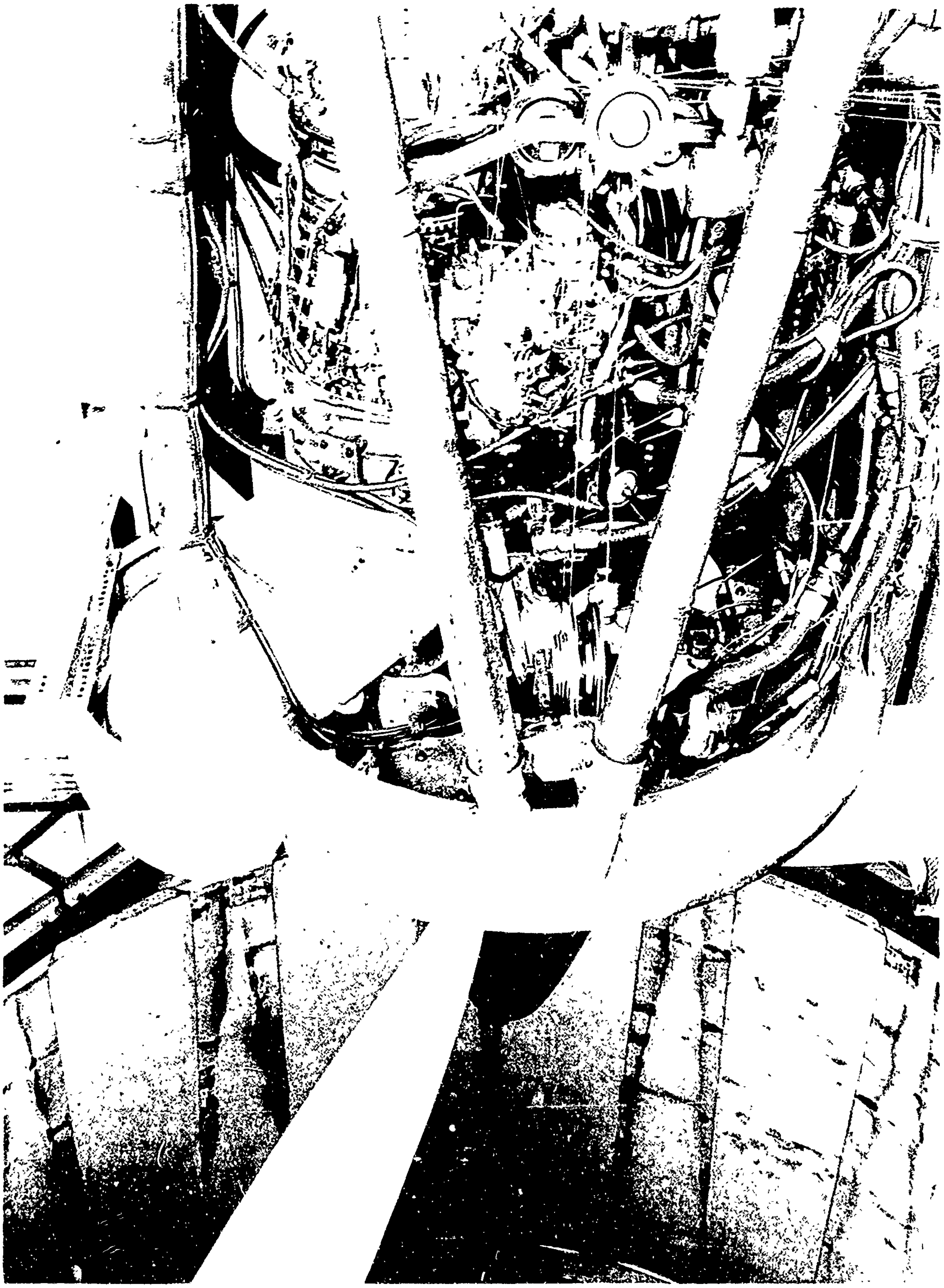
FIGURE 4


IG-368-4

INLET DUCT MOUNTED ON ENGINE

(Negative No. 025540)

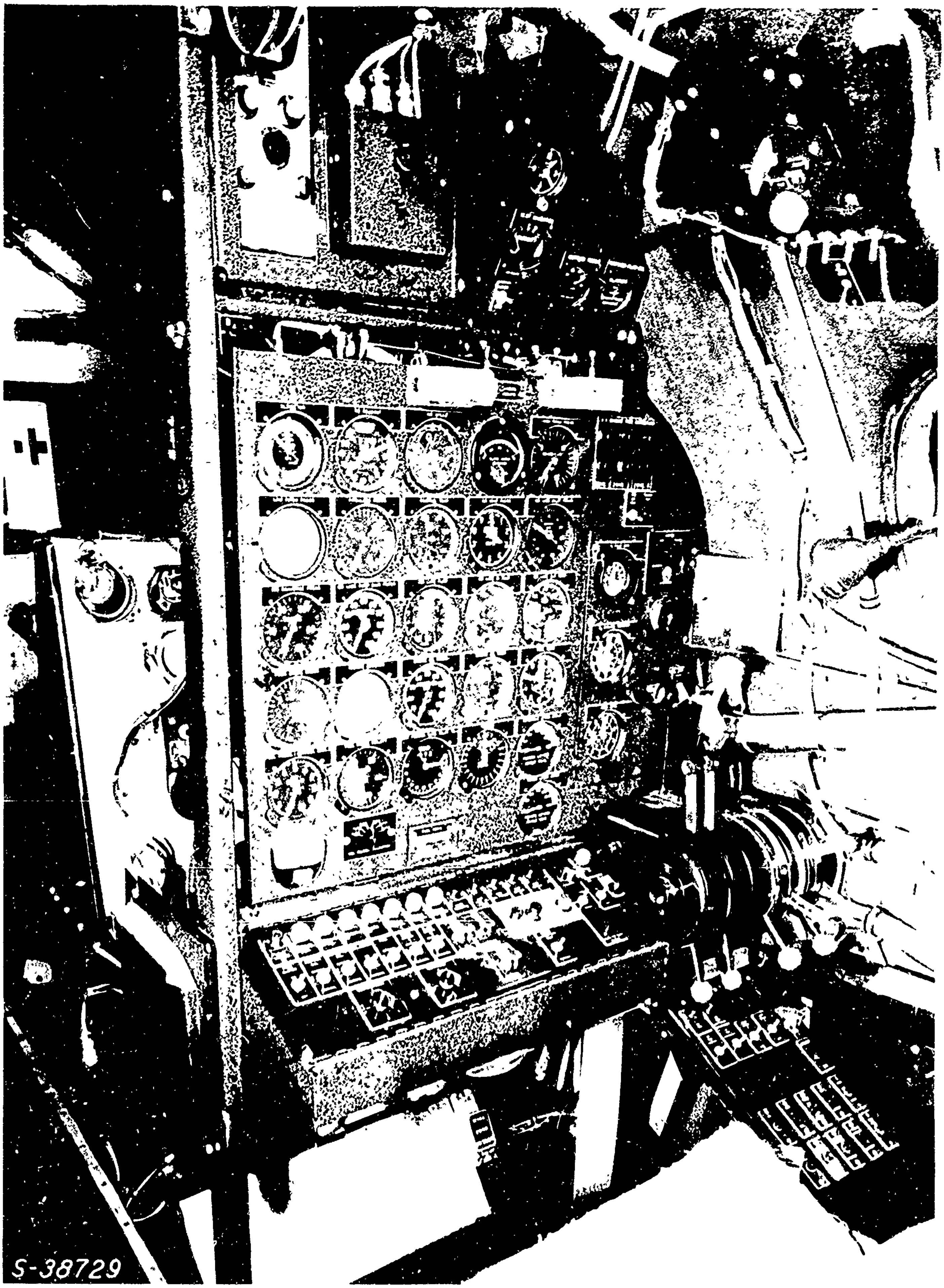
FIGURE 5



TEST INSTALLATION OPERATORS PANEL

(Negative No. S38729)

FIGURE 6



OSCILLOGRAPH RECORDING EQUIPMENT

(Negative No. S38735)

FIGURE 7

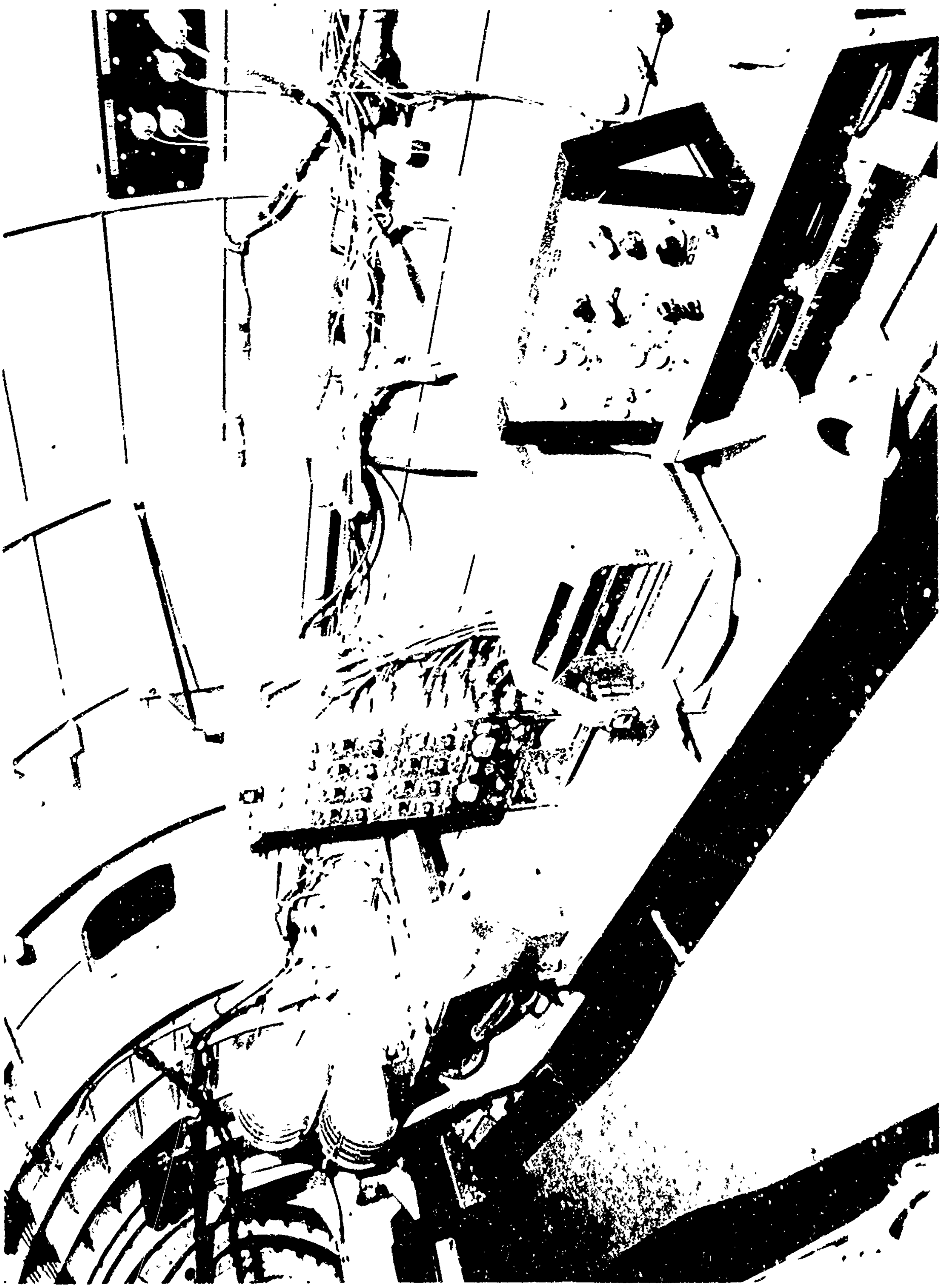
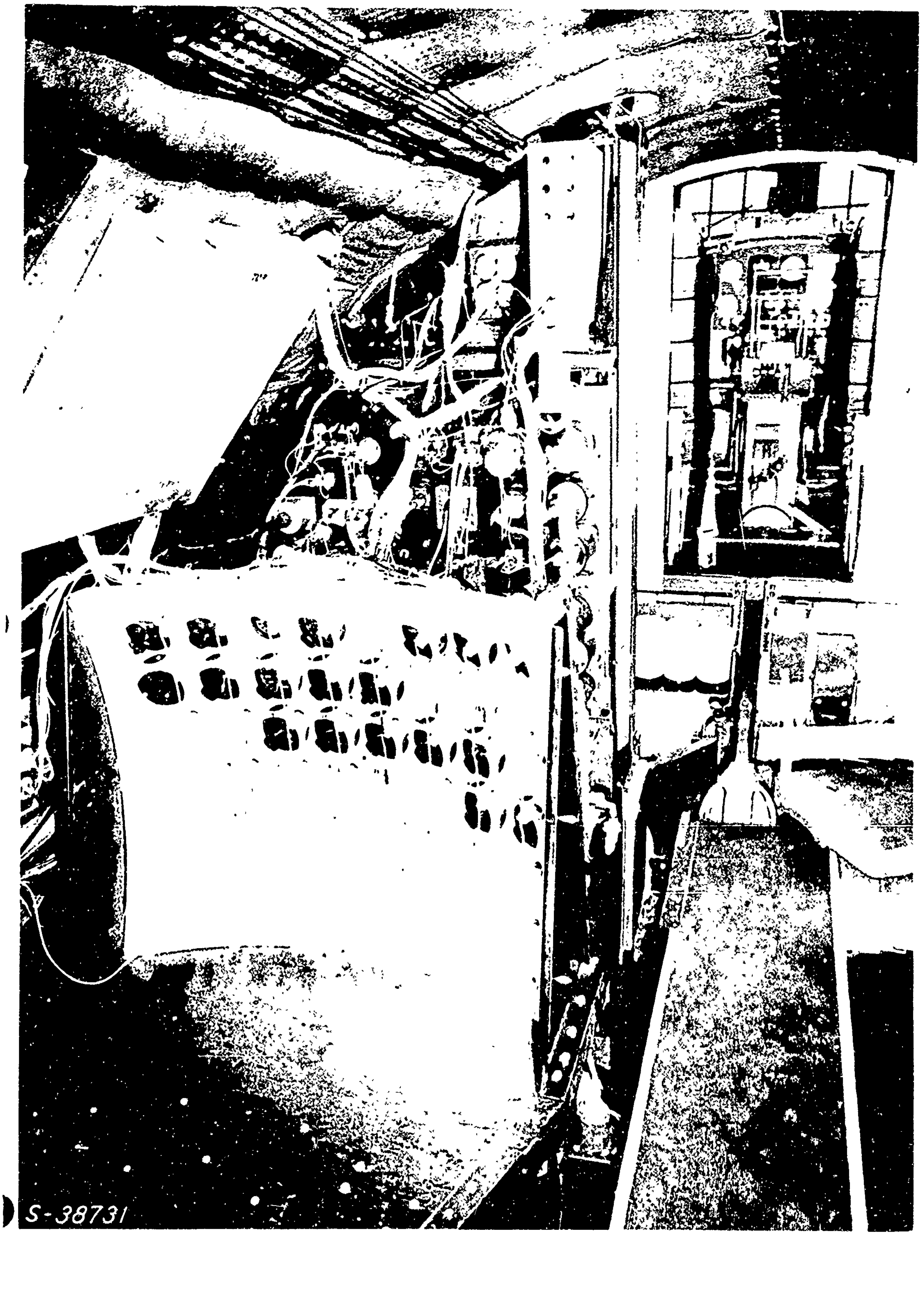


PHOTO PANEL

(Negative No. S38731)

FIGURE 8

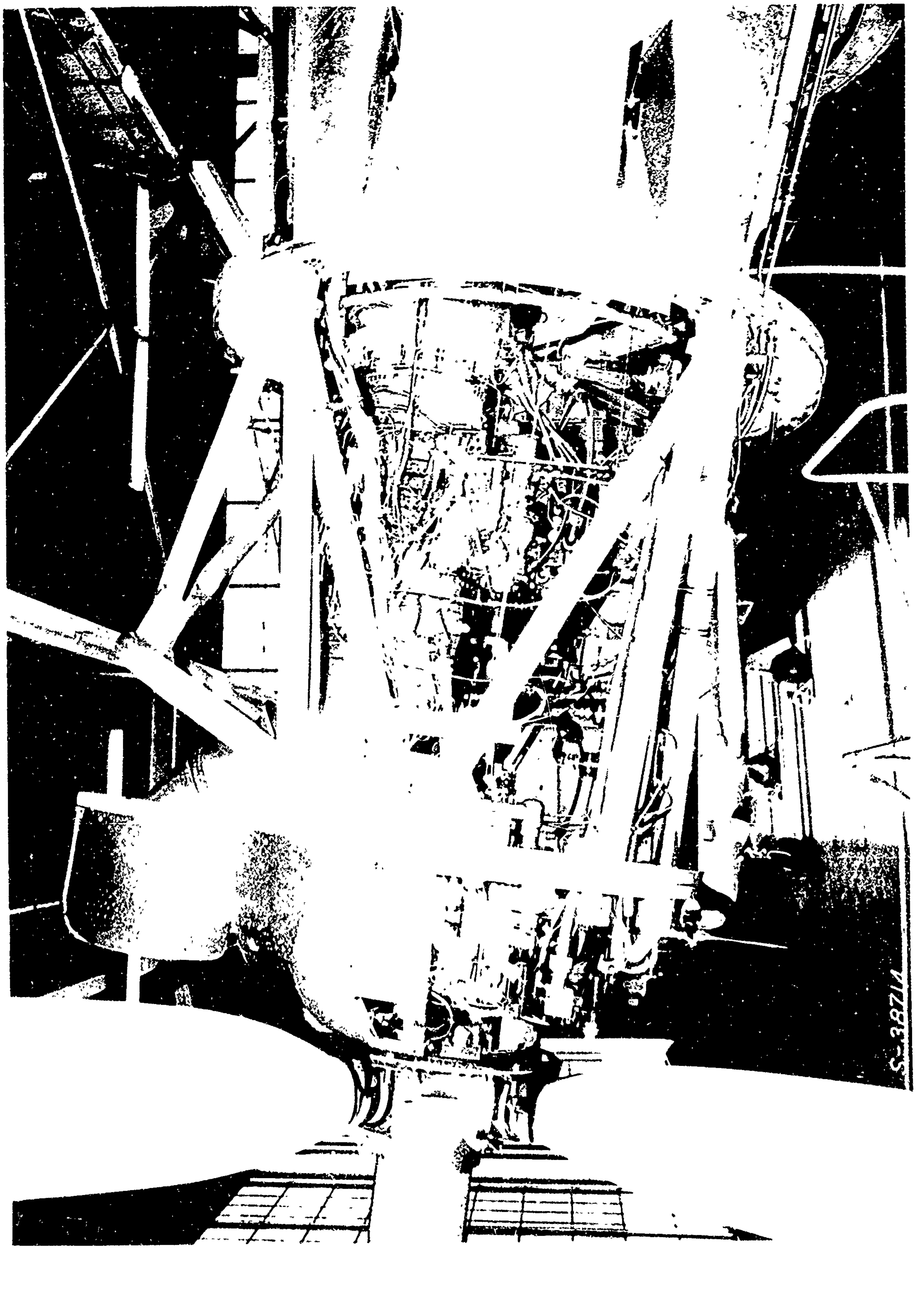

S-38731

TEST NACELLE, LEFT SIDE

73EGB1 INSTALLATION

(Negative No. S38714)

FIGURE 9

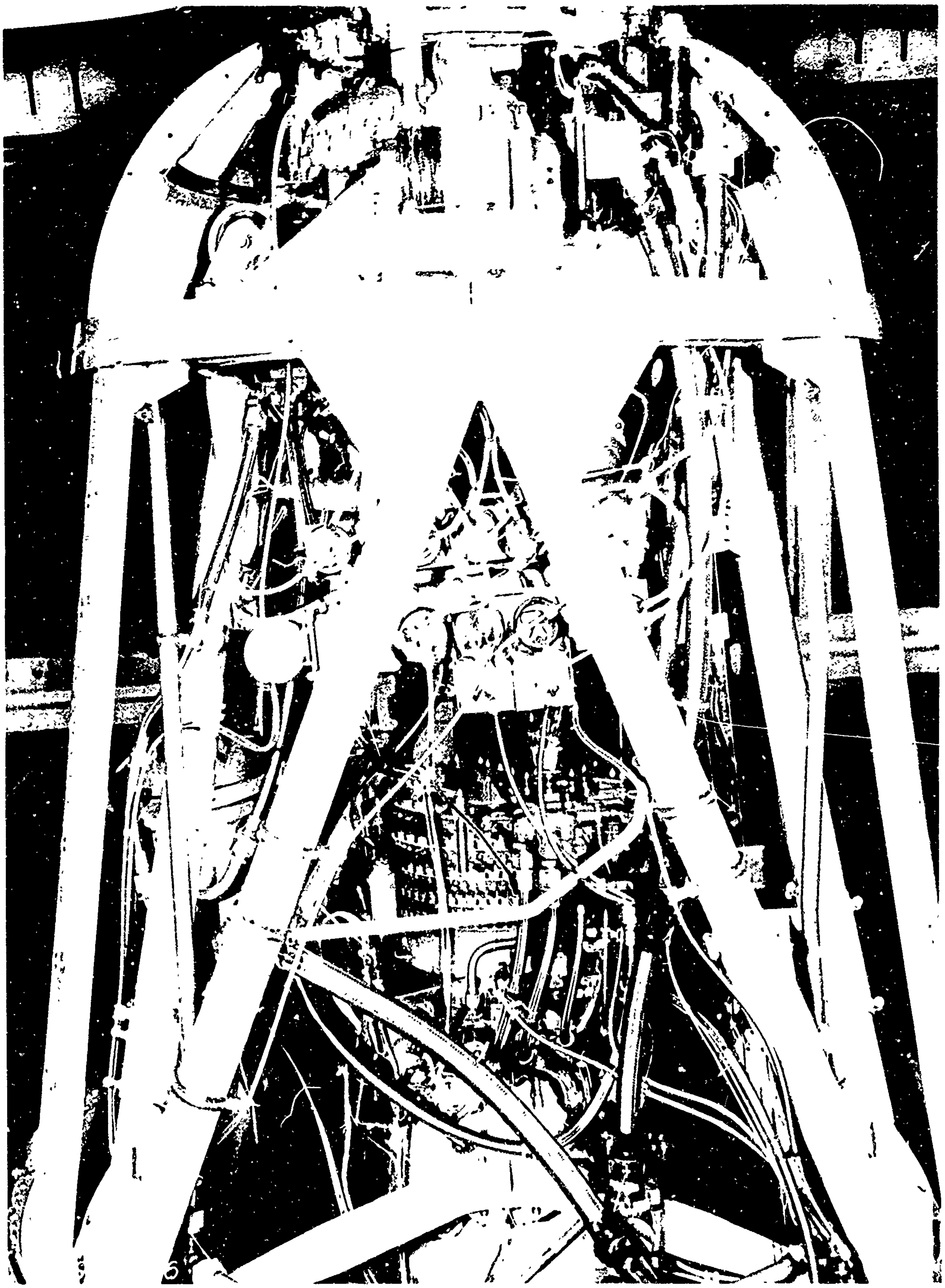


TEST NACELLE, BOTTOM VIEW

73EGB1 INSTALLATION

(Negative No. S38726)

FIGURE 10

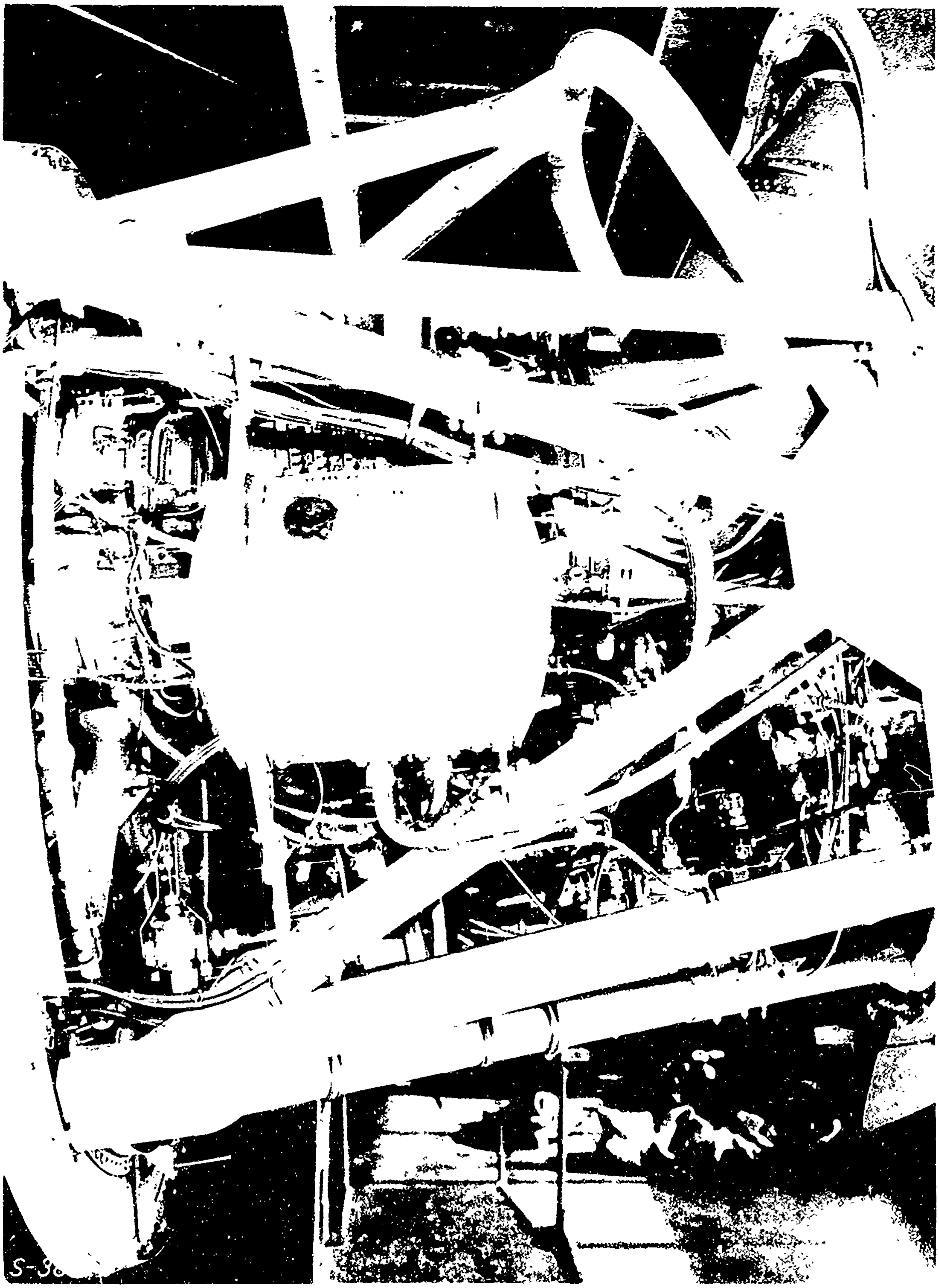


TEST NACELLE, RIGHT SIDE

73EOB1 INSTALLATION

(Negative No. S38716)

FIGURE 11

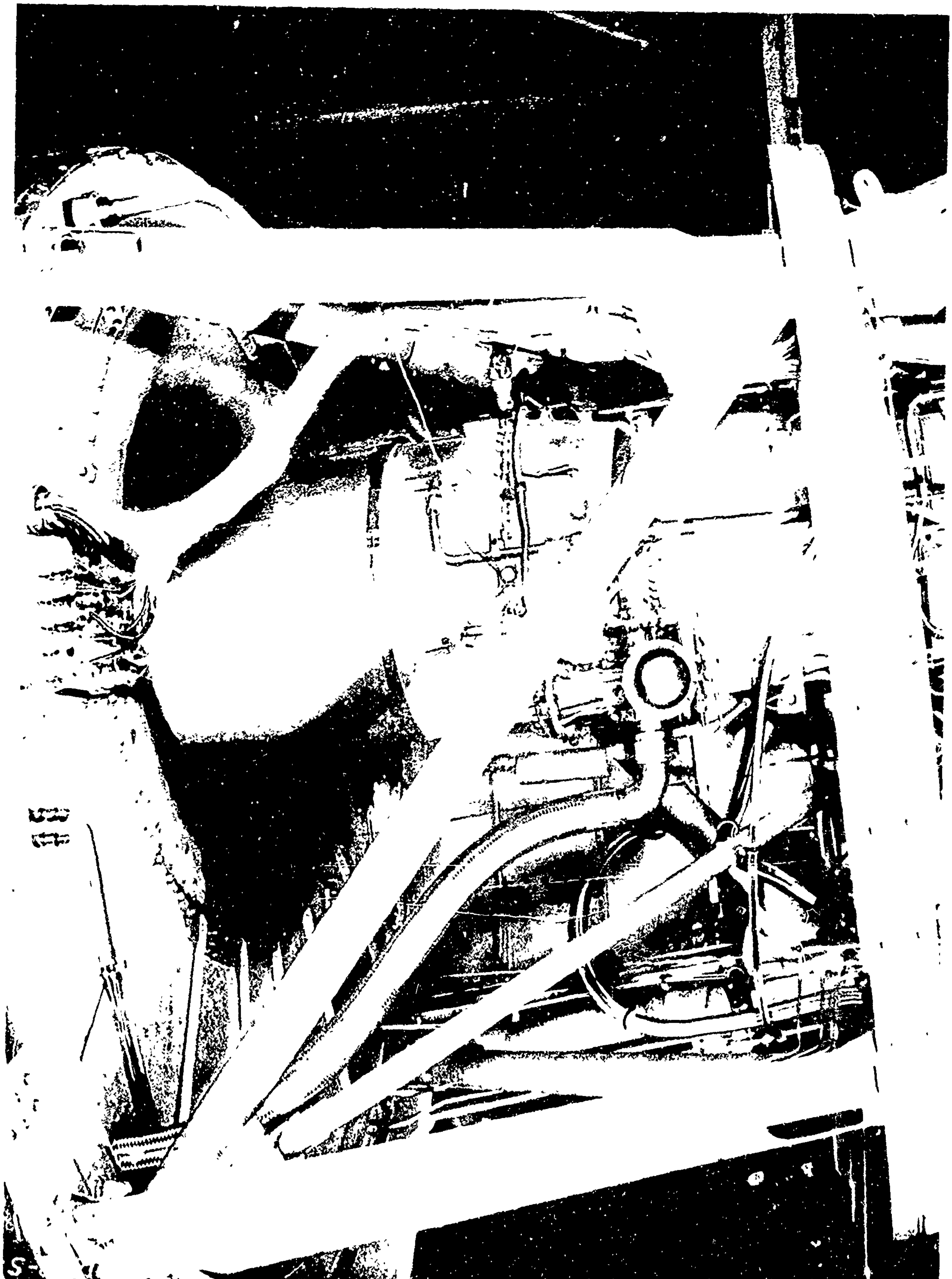


TEST NACELLE, RIGHT SIDE

73EGB1 INSTALLATION

(Negative No. S38718)

FIGURE 12



AIRCRAFT AT COMPLETION OF MODIFICATION

73EGB1 INSTALLATION

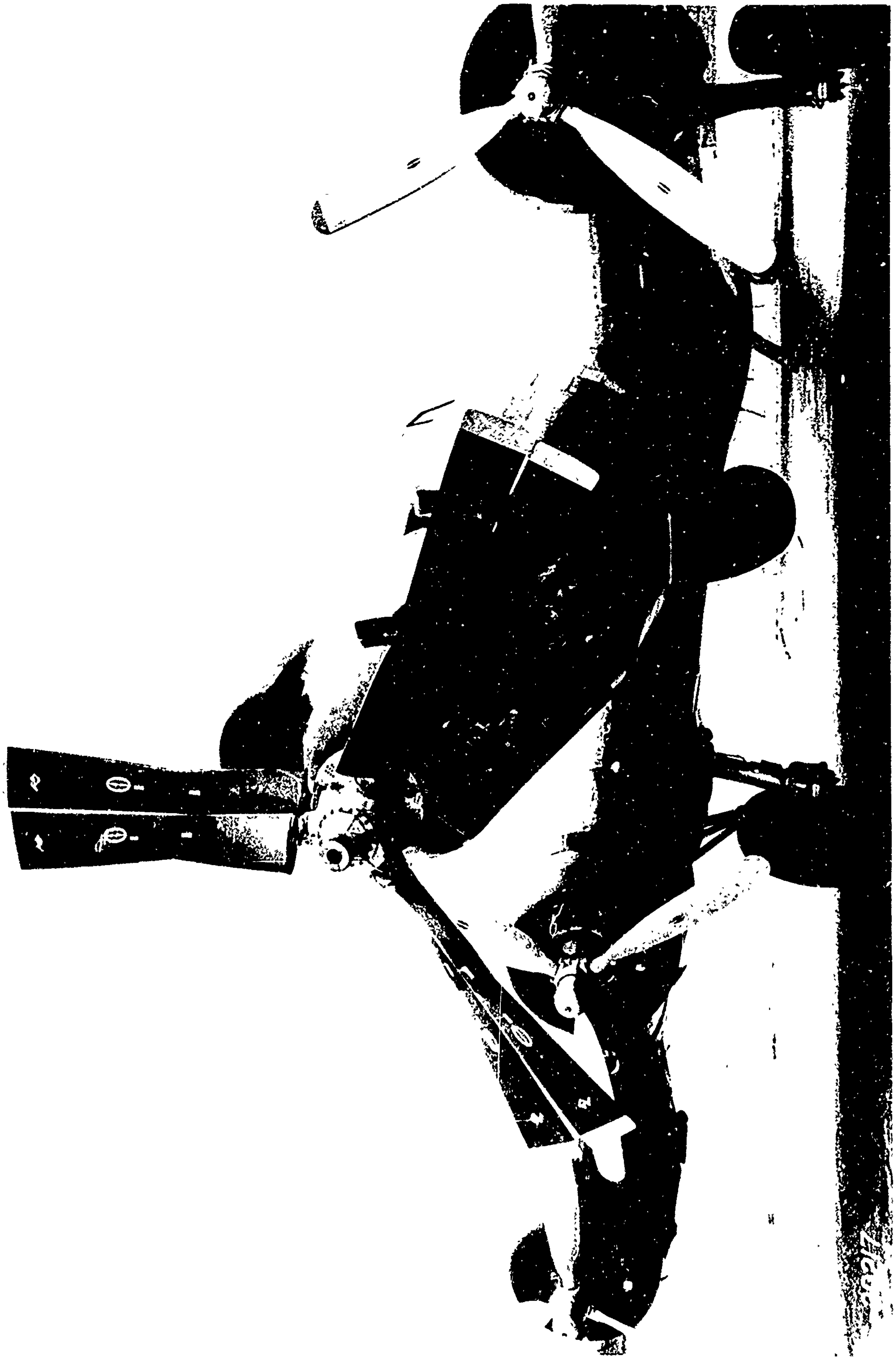
(Negative No. S38264)

FIGURE 13

VC86260 INSTALLATION

(Negative No. G29217)

FIGURE 14

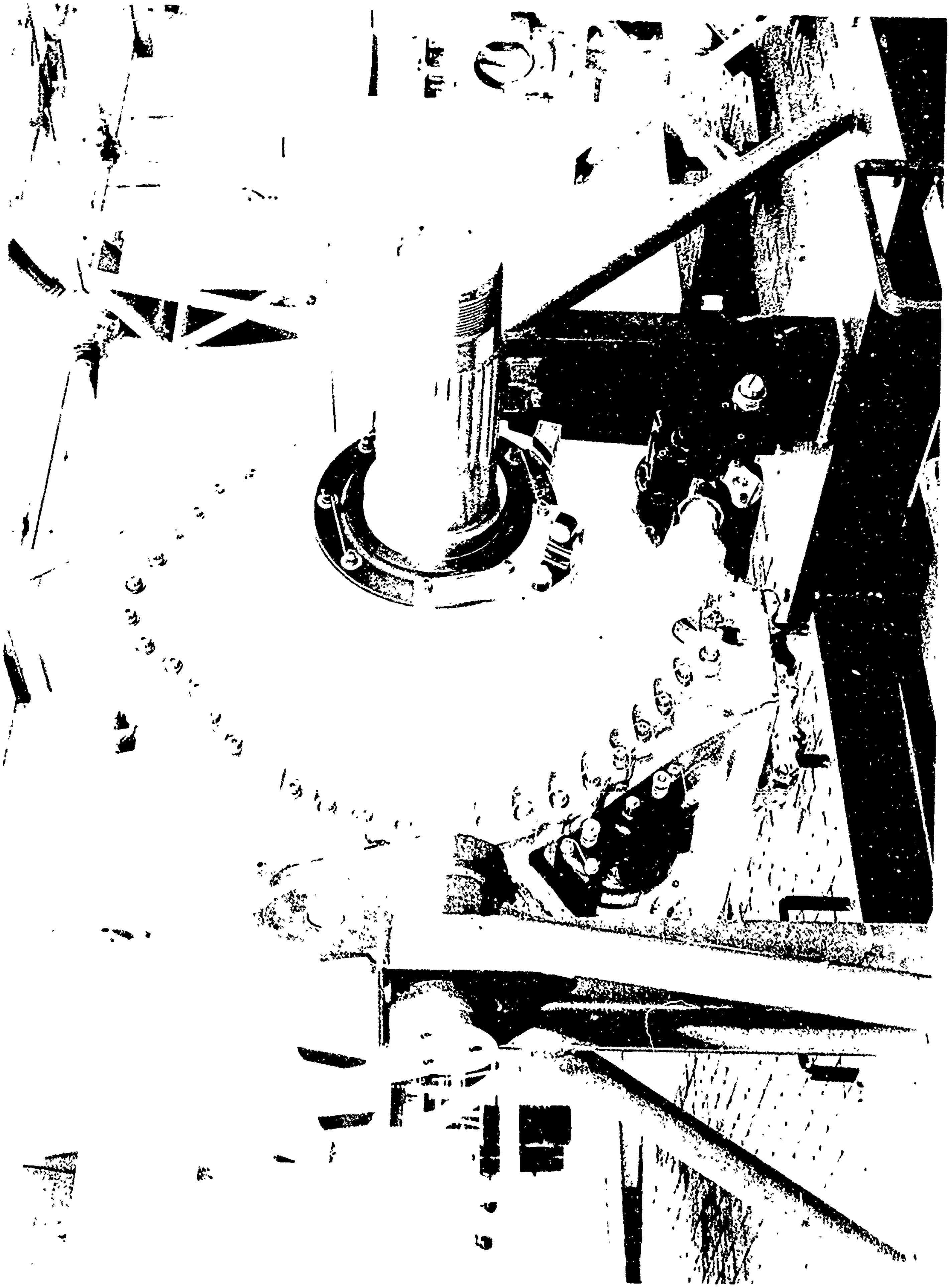


SK56029 SPEED REDUCTION GEARBOX

FRONT VIEW

(Negative No. G27168)

FIGURE 15

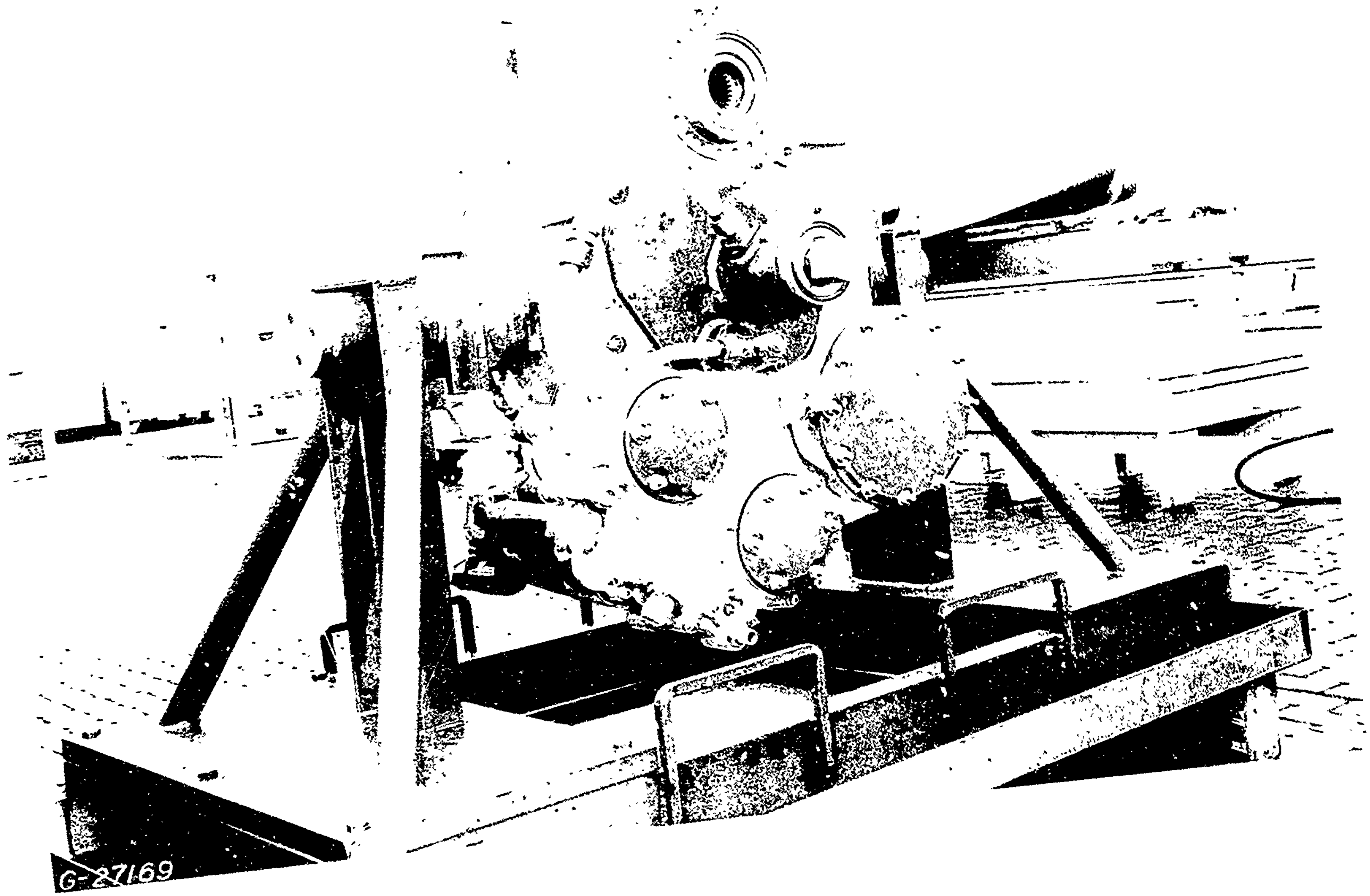


SK56029 SPEED REDUCTION GEARBOX

REAR VIEW

(Negative No. G27169)

FIGURE 16

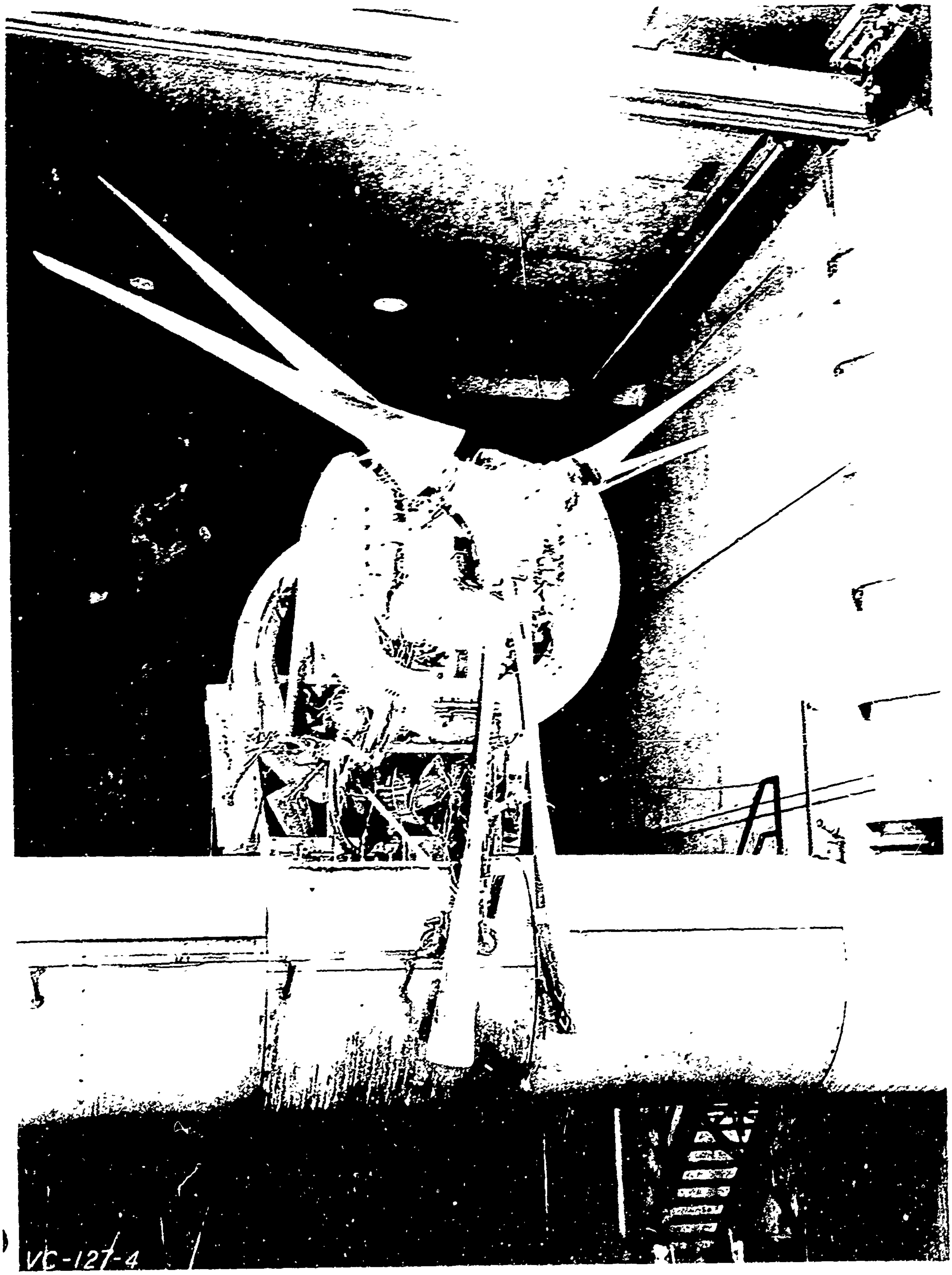

G-27169

SK56029 SPEED REDUCTION GEARBOX AND

VC86260 PROPELLER MOUNTED IN "E" TEST CELL

(Negative No. VC127-4)

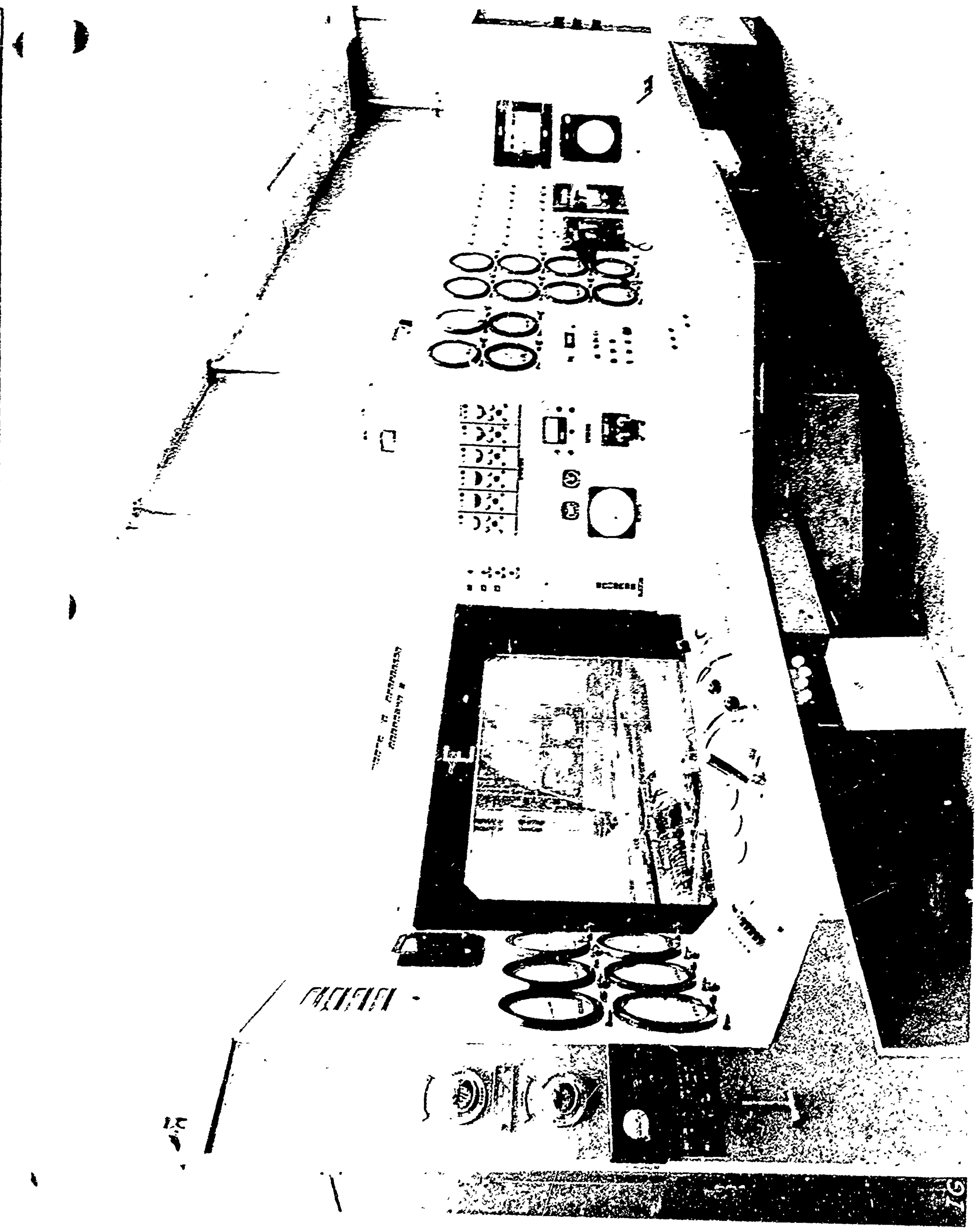
FIGURE 17


VC-127-4

"E" TEST CELL CONTROL ROOM

(Negative No. IG-82-4)

FIGURE 18



73EGB1 PROPELLER INSTALLATION IN FLIGHT

(Negative No. 028778)

FIGURE 19

VC86260 PROPELLER INSTALLATION IN FLIGHT

(Negative No. C994)

FIGURE 20

VC86260 PROPELLER INSTALLATION IN FLIGHT

TEST PROPELLER FEATHERED

(Negative No. C993)

FIGURE 21


N1115N

PFRT 50 HOUR ENGINE TEST INSTRUMENTATION

PROPELLER PARAMETER	TRANSDUCER	READOUT	MEASUREMENT ACCURACY
Speed	Tachometer	Eput Meter and Sanborn Recorder	± 0.1%
Blade Angle	Potentiometer	Gage and Sanborn Recorder	± 1%
Condition Lever	Potentiometer	Gage and Sanborn Recorder	± 1%
High Pitch Pressure	Press. Transducer	Press. Gage and Sanborn Recorder	± 1%
Low Pitch Pressure	Press. Transducer	Press. Gage and Sanborn Recorder	± 1%
Pitchlock Pressure	Press. Transducer	Press. Gage and Sanborn Recorder	± 1%
GEARBOX PARAMETER			
Vibration	MB Pickup	EPR Meter	± 10%
Oil Inlet Temperature	Thermocouple	Bristol Recorder	± 3%
Scavenge Outlet Pressure	Press. Gage	Press. Gage	± 0.5%
ENGINE PARAMETER			
Power Turbine Speed	Tachometer	Eput Meter	± 0.1%
Gas Generator Speed	Tachometer	Eput Meter and Sanborn Recorder	± 0.1%
Torque	Phase Detector	Gage	± 1%
Fuel Flow	Potter Element	Gage and Eput Meter	± 1%
Turbine Inlet Temperature	Thermocouple	Howell Gage	± 0.2%
Power Lever Position	Potentiometer	Gage and Sanborn Recorder	± 1%
Ambient Temperature	Thermocouple	Bristol Recorder	± 3%
Barometric Pressure	Barometer	Barometer	± 0.1%

FIGURE 22

50 HOUR FLIGHT TEST INSTRUMENTATION

PROPELLER PARAMETER	TRANSDUCER	READOUT	MEASUREMENT ACCURACY
Condition Lever	Potentiometer	Oscillograph and gages (2)	± 1%
Blade Angle	Potentiometer	Oscillograph and gages (2)	± 1%
High Pitch Pressure	Pressure Transducer	Oscillograph and pressure gages (2)	± 1%
Low Pitch Pressure	Pressure Transducer	Oscillograph and pressure gages (2)	± 1%
Pitch Lock Pressure	Pressure Transducer	Oscillograph and pressure gages (2)	± 1%
Control Temperature	Thermocouple	Gages (2)	± 3%
Speed	Tachometer	Gage	± 0.1%
GEARBOX PARAMETER			
Vibration	MB Pickup	EPR Meter	± 10%
Lube Inlet Temp.	Thermocouple	Gages (2)	± 3%
Scavenge Outlet Temp.	Thermocouple	Gages (2)	± 3%
Skin Temp.	Thermocouple	Gage	± 3%
Lube Pressure	Pressure Transducer	Gages (2)	± 1%
Scavenge Outlet Pressure	Pressure Transducer	Gage	± 1%
Lube Pump Inlet Pressure	Pressure Transducer	Gage	± 1%
Vent Pressure	Pressure Transducer	Gage	± 1%
Lube Flow	Potter Element	Gage	± 1%
Brake Pressure	Pressure Transducer	Gage	± 1%
ENGINE PARAMETER			
Power Turbine Speed	Tachometer	Oscillograph and Gages (2)	± 0.1%
Gas Generator Speed	Tachometer	Oscillograph and Gages (2)	± 0.1%
Torque	Phase Detector	Gage	± 1%

FIGURE 23

50 HOUR FLIGHT TEST INSTRUMENTATION (continued)

ENGINE PARAMETER	TRANSDUCER	READOUT	MEASUREMENT ACCURACY
Fuel Flow	Potter Element	Oscillograph and gage	± 1%
Fuel Inlet Pressure	Pressure Transducer	Gage	± 1%
Fuel Control Pressure	Pressure Transducer	Gage	± 1%
Lube Pressure	Pressure Transducer	Gage	± 1%
Lube Temperature	Thermocouple	Gage	± 3%
Turbine Inlet Temperature	Thermocouple	Gage	± 3%
Power Lever	Potentiometer	Oscillograph and gage	± 1%
Vibration	CEC Pickup	EPR Meter	± 10%
Strut Pad Temp.	Thermocouple	Gage	± 3%
Accessory Gearbox Temp.	Thermocouple	Gage	± 3%
Compressor Rear Frame Temp.	Thermocouple	Gage	± 3%
Burner Case Temp.	Thermocouple	Gage	± 3%
Turbine Casing-Front, Temp.	Thermocouple	Gage	± 3%
Turbine Casing-Rear, Temp.	Thermocouple	Gage	± 3%
Rear Mount Temp.	Thermocouple	Gage	± 3%
GENERAL PARAMETER			
Nacelle Firewall Beam Temp.	Thermocouple	Gage	± 3%
Altitude		Gages (2)	± 1%
Airspeed		Gages (2)	± 1%
Air Temp.	Thermocouple	Gages (2)	± 3%

FIGURE 23

TEST CHRONOLOGY - 73EGB1 PROPELLER

Date	Run	Time	Total Ground Time	Total Flight Time	Total Aircraft Time	Remarks
10-25-65	G1	:15	:15			Leak and operational check. Torque readout inoperative and oil leak in control area.
10-28-65	G2	:30	:45			Leak and operational check. Torque readout still inoperative. Traced oil leak to pressure instrumentation in control cover.
11-1-65	G3	:30	1:15			Leak and operational check. Torque readout ok. Oil leak in control area corrected, but there is another leak.
11-2-65	G4	:20	1:35			Leak check. Traced oil leak to engine accessory drive gearbox.
11-8-65	G5	1:00	2:35			Leak check. No leaks with new engine accessory drive gearbox. Aircraft ok for flight.
11-9-65	F1	0			1:15	Aircraft operational check.
11-10-65	G6	:20	2:55			Started headwind stress survey per 128PT-91. Smoke observed coming from test nacelle, but no cause could be found. Aux pump operation marginal. It tends to lose its prime.
11-11-65	G7	1:50	4:45			Completed headwind stress survey per 128PT-91.
11-15-65	G8	:20	5:05			Check of revised oil system to provide separate line for aux pump. Operation ok.
11-16-65	G9	1:55	7:00			Ran steady state and transient checks per 128PT-90. Operation ok. Immediately prior to shutdown, sparks were noted coming from test nacelle. Brake was found to be partially actuated and had burned up. Aux pump operation is still marginal.
11-17-65	G10	:20	7:20			System check after installation of new brake.
11-17-65	F2	:25		:25	2:20	Checked unfeather operation, air starting, and feathering operation. All ok.

FIGURE 24

TEST CHRONOLOGY - 73EGB1 PROPELLER

Date	Run	Time	Total Ground Time	Total Flight Time	Total Aircraft Time	Remarks
11-18-65	G11	1:30	8:50			Started rerun of steady state and transient checks run in G9. Power lever, fuel flow, and gas generator speed did not record in G9.
11-19-65	F3	1:25		1:50	4:15	Checked steady state and transient operation at 5000 feet and 185 mph.
11-22-65	G12	1:25	10:15			Completed rerun of transients started in G11.
11-23-65	F4	2:25		4:15	7:15	Checked steady state and transient operation at 10,000 feet and 185 mph.
11-24-65	F5	1:50		6:05	9:20	Checked steady state and transient operation at 20,000 feet and 185 mph.
11-26-65	F6	1:35		7:40	11:35	Checked steady state and transient operation at 30,000 feet and 185 mph per 128PT-90. Aux pump operation poor.
11-29-65	F7	1:45		9:25	13:45	Ran steady states and transients at 5000 feet and 240 mph per 128PT-90. Aux pump operation still poor.
11-29-65	F8	1:50		11:15	16:05	Ran steady states and transients at 5,000 feet and 140 mph per 128PT-90.
12-1-65	F9	0		11:15	17:35	Aborted start attempt when propeller cycled on secondary electrical low pitch stop. Investigation on ground revealed metal machining chips in operators panel which probably shorted out prop electrical system.
12-2-65	G13	:15	10:30			Checked out prop operation. Everything normal.
12-2-65	F10	:55		12:10	18:50	Ran stress survey at 5,000 and 10,000 feet per 128PT-91. Prop operation normal.
12-6-65	F11	1:00		13:10	20:15	Repeated transients at 5,000 feet, 150 and 240 mph per 128PT-90. Records taken during F7 and F8 did not show condition lever movement.

FIGURE 24

FIGURE 24

TEST CHRONOLOGY - 73EGB1 PROPELLER

Date	Run	Time	Total Ground Time	Total Flight Time	Total Aircraft Time	Remarks
12-7-65	F12	1:10		14:20	21:40	Ran steady state and transients at 10,000 feet and 150 mph per 128PT-90.
12-8-65	G14	:20	10:50			Check of blade angle readout on oscillograph. Data taken during F11 and F12 had poor blade angle trace. During run, oil noted leaking from prop in blade area.
12-15-65	G15	:25	11:15			Leak check of prop after reinstalling blades and check of blade angle readout after cleaning flight ring.
12-22-65	F13	1:55		16:15	24:35	Reran all steady states and transients at 5000 feet and 150 mph per 128PT-90.
12-28-65	F14	2:05		18:20	26:55	Reran all steady states and transients at 5,000 feet and 240 mph, and steady states at 10,000 feet and 150 mph per 128PT-90. New aux pump installed prior to flight. Operation excellent.
12-28-65	F15	1:50		20:10	29:05	Ran transients at 10,000 feet and 150 mph, and steady states at 10,000 feet and 240 mph per 128PT-90.
12-29-65	F16	1:50		22:00	31:15	Ran transients at 10,000 feet and 240 mph per 128PT-90. Climb made to 20,000 feet for further testing, but #3 engine failed.
1-4-66	F17	1:00		23:00	32:45	Ran steady states and transients at 20,000 feet and 150 mph per 128PT-90.
1-5-66	F18	1:50		24:50	34:45	Ran steady states and transients at 20,000 feet and 210 mph and started attitude testing per 128PT-90. Aborted test after failure of #1 and #3 engines.
1-11-66	G16	1:20	12:35			Ran crosswind stress survey per 128PT-91.
1-13-66	F19	:20		25:10	35:15	No data taken. #1 engine feathered on climb out.
1-25-66	F20	1:35		26:45	37:30	Ran stress survey at 20,000 feet per 128PT-91.

FIGURE 24

TEST CHRONOLOGY - 73EGB1 PROPELLER

Date	Run	Time	Total Ground Time	Total Flight Time	Total Aircraft Time	Remarks
1-25-66	G17	:20	12:55			Ran stress survey during taxi runs per 128PT-91. Limite to speeds of 20 and 40 mph due to aircraft brake problem
1-26-66	F21	1:35		28:20	39:35	Ran remainder of attitude tests started in F18 and one flight cycle per 128PT-90.
1-27-66	F22	4:50		33:10	44:35	Ran four flight cycles per 128PT-90.
1-28-66	F23	0		33:10	47:15	All attempts to light engine results in hot starts.
2-1-66	F24	2:30		35:40	50:25	Ran one flight cycle per 128PT-90 and had inflight pictures taken.
2-4-66	G18	1:00	13:55			Ran taxi tests per 128PT-90.
2-4-66	F25	2:20		38:00	53:05	Ran two flight cycles per 128PT-90.
2-7-66	F26	4:20		42:20	57:35	Ran three flight cycles per 128PT-90. Checked propeller performance.
2-8-66	F27	4:25		46:45	62:15	Ran four flight cycles per 128PT-90.
2-9-66	F28	3:30		50:15	66:00	Ran three flight cycles per 128PT-90. Total flight cycles, 18.

FIGURE 24

TEST CHRONOLOGY - VC86260 PROPELLER

Date	Run	Time	Total Ground Time	Total Flight Time	Total Aircraft Time	Remarks
3-2-66	G1	:15	:15			Leak and operational check. Fuel control set low and minor oil leak in scavenge line.
3-3-66	G2	1:45	2:00			Ran headwind stress survey per 128PT-94. Fuel control still not set right.
3-7-66	G3	:20	2:20			Fuel control checkout. Operation still poor.
3-11-66	G4	:10	2:30			Fuel control checkout ok.
3-15-66	G5	:35	3:05			Started steady state and transients per 128PT-93. Experienced control transfer bearing seizure.
3-21-66	G6	:40	3:45			Leak and operational check after reinstalling control ok.
3-22-66	G7	1:40	5:25			Ran steady state and transient operation, and nacelle temperature survey per 128PT-93. Installation ok for flight.
3-23-66	F1	1:00		1:00	67:20	Checked unfeathering, feathering, and air start operatio All ok.
3-25-66	G8	:10	5:35			Checkout of oscillograph set up for stress survey record
3-25-66	F2	1:10		2:10	68:45	Ran part of stress survey at 5,000 feet per 128PT-94.
3-28-66	G9	:35	6:10			Started crosswind stress survey per 128PT-94. Discontinu test due to high prop vibrations. Wind 18 mph, gusts to 25 mph.
3-29-66	G10	:50	7:00			Completed crosswind stress survey started in G9. No recurrance of vibration noted in G9. Wind 10-12 mph.
3-30-66	F3	1:00		3:10	60:00	Completed stress survey at 5,000 feet per 128PT-94.

FIGURE 25

TEST CHRONOLOGY - VC86260 PROPELLER

Date	Run	Time	Total Ground Time	Total Flight Time	Total Aircraft Time	Remarks
3-31-66	G11	:05	7:05			Check oscillograph operation after cleaning flight ring
3-31-66	F4	2:05		5:15	72:20	Completed flight stress survey per 128PT-94.
4-1-66	G12	:40	7:45			Started stress survey during taxi tests per 128PT-94. Aborted due to strain gage failure.
4-4-66	G13	1:15	9:00			Continued stress survey during taxi test. Aborted by aircraft tail wheel problems.
4-5-66	G14	:45	9:45			Completed stress survey during taxi test.
4-7-66	G15	:50	10:35			Check oscillograph operation after switch to prop parameters.
4-11-66	F5	2:20		7:35	74:50	Ran all steady state and transients at 6500 feet, 150 and 230 mph and nacelle temperature survey per 128PT-93 Run made at 6500 feet instead of 5,000 feet due to clou
4-11-66	F6	1:30		9:05	76:35	Ran all steady states and transients at 10,000 feet, 150 and 230 mph.
4-14-66	F7	2:45		11:50	79:35	Ran all steady state and transients at 20,000 feet, 150 and 210 mph, all attitude checks, and all steady state and transient operation at 30,000 feet, 150 and 180 mph per 128PT-93.
4-14-66	F8	1:15		13:05	80:55	Performance check of installation.
4-15-66	F9	3:20		16:25	84:25	Ran three flight cycles per 128PT-93.
4-18-66	F10	4:15		20:40	88:55	Ran four flight cycles per 128PT-93.
4-19-66	F11	4:00		24:40	93:15	Ran four flight cycles per 128PT-93.
4-21-66	G16	:10	10:45			High speed motion pictures of blade movement.

FIGURE 25

TEST CHRONOLOGY - VC86260 PROPELLER

Date	Run	Time	Total Ground Time	Total Flight Time	Total Aircraft Time	Remarks
4-22-66	F12	:45		25:25	94:15	Flight for inflight pictures.
4-25-66	F13	2:10		27:35	96:35	Ran two flight cycles per 128PT-93.
4-26-66	F14	4:15		31:50	101:15	Ran four flight cycles per 128PT-93.
5-2-66	F15	4:55		36:45	106:15	Ran four flight cycles per 128PT-93.
5-3-66	F16	4:05		40:40	110:40	Ran four flight cycles per 128PT-93.
5-4-66	F17	5:15		46:05	116:10	Ran five flight cycles per 128PT-93.
5-5-66	F18	3:10		49:15	119:30	Ran three flight cycles per 128PT-93. Total flight cycles, 33.
5-6-66	F19	1:05		50:20	120:40	Ran a post test calibration.
5-10-66	G17	:50	11:35			Ran taxi tests per 128PT-93.

FIGURE 25

<u>73EGB1/6903-14 PROPELLER STRESS SUMMARY</u>

CONDITION	ALT.	PRPM	IAS(MPH)	+ STRESS PSI 20" F.T.	20"F.T.-Shear	50" F.I.	LE	90° FLE
G.I.	20,000'	1130	180	600	200	650	500	400
F.I.				"	"	650	"	"
60%				"	"	1150	"	"
75%				"	"	1250	"	900
80%				"	"	1550	"	"
90%				"	"	1500	"	"
80%	20,000'	1130	230	600	200	500	800	600
60%			225	"	"	"	"	"
F.I.			215	"	"	"	"	"
G.I.			200	"	"	"	"	"
Str. Flt. 20° Bank-Right	20,000'			1650	700	5600	3500	5000
" " " " Left				1900	"	5150	3400	4700
" " 45° " Right				1900	"	5000	3000	4900
" " " " Left				1900	"	4700	3100	4200
0 "G"				500	200	1800	1700	1800
-G				500	300	2200	2000	2000
25° Nose Dn, 10° Right				1600	700	4300	2900	4000
" " Up, " Left				1000	400	3750	2400	3400
Nose Up 10° Right				-1000	600	3400	2400	3400
" " " Left				1000	500	3200	2300	2700
Transient, PL 60% Normal	10,000'	700-1250-700	200	800	200	1000	600	600
" " 80% "		800-1250-800		"	"	"	"	"
" " Normal		900-1250-900		"	"	"	500	"
" " Take-Off		1050-1250-1050		"	"	"	"	500
Trans. Normal-T.O.-Nprmal	10,000'	Cond. Lever Set 1130	200	800	200	1000	500	500
" F.I.-T.O.-F.I.				"	"	"	"	"
" Normal-T.O.-Normal		Cond. Lever Set 1250		"	"	"	"	"
" F.I.-T.O.-F.I.				"	"	"	"	"
" F.I.-T.O.-F.I.	10,000'	Move Cond. L. & P.L. F.I.= 1130, T.O.= 1250	200	800	200	1100	500	950
" T.O.-G.I.-T.O.	"		"	"	"	"	"	"

FIGURE 26

FIGURE 26

TABULATION-73EGB1 PROPELLER NACELLE TEMPERATURE SURVEY

Altitude and Airspeed	Ground		5000' 200mph	
Power Setting	**Flight Idle**	**Take-off**	**Flight Idle**	**Take-off**
Thermocouple Location				
Engine				
Strut Mount Pad	94°F	80°F	34°F	34°F
Accessory Gear Box	152	148	82	82
Compressor Rear Frame	332	554	374	486
Burner Case	292	424	208	298
Turbine Case Front	438	566	406	508
Turbine Case Rear	658	640	476	478
Rear Mount	106	86	46	44
Nacelle				
Firewall Beam	162	126	46	50
Propeller-Gearbox				
Control	182	220	188	190
Gearbox Skin	168	180	132	132
Lube in	172	198	148	158
Lube out	178	220	166	180
Ambient	48	48	19	19

FIGURE 27

TABULATION

Power Setting	60% NORMAL					NORMAL
Condition Lever Movement	1000 rpm-1250 rpm-1000 rpm			700 rpm-12		1000 rpm
Altitude & Airspeed	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Decrease Pitch Rate (Degrees/Sec)	Incr Pitc (Deg)	Blade Angle Chang (Degr
Ground	5	8.5	16.5-15-16.5	5		16.5-1
5000' and 150 mph	6	12.5	25.5-19-25.5	4.5		25.5-1
5000' and 240 mph	5	13	28-20-28	7		28-20-
10000' and 150 mph	5.5	11.5	29-20-29	6		29-20-
10000' and 240 mph	6	13	36-28-36	5		36-28-
20000' and 150 mph	4.5	11	34.5-27-34.5	4		34.5-2
20000' and 205 mph	4.5	10	44-37-44	3.5		44-37-
30000' and 185 mph	5.5	12.5	40-32-40	3.5		40-32-

Power Setting	NORMAL					MAL
Condition Lever Movement	1000 rpm-1250 rpm-1000 rpm			900 rpm-12		1000 rpm
Altitude & Airspeed						
Ground	6	15.5	22.5-15-22.5	5		22.5-1
5000' and 150 mph	5.5	11	29.5-22-29.5	4.5		29.5-2
5000' and 240 mph	5	13	33-23-33	6		33-23-
10000' and 150 mph	5	12	35-24-35	5.5		35-24-
10000' and 240 mph	4.5	12.5	38-30-38	4.5		38-30-

A

TABULATION-

TABULATION-73EGB1 PROPELLER CONDITION LEVER TRANSIENTS

...ase Rate ...es/Sec)	Incr Pitc (Deg.)	Blade Angle Change (Degrees)	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degree/Sec)	Blade Angle Change (Degrees)	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degree/Sec)	Blade Angle Change (Degrees)
NORMAL								80% NORM-
700 rpm-12		1000 rpm	700 rpm-1250 rpm-700 rpm			1000 rpm-1250 rpm-1000 rpm		
5		16.5-15-16.5	5	11.5	33.5-15-33.5	5	12	19.5-15-19.5
4.5		25.5-19-25.5	4.5	11.	39.5-19-39.5	5	14	27.5-19-27.5
7		28-20-28	7	14	43-20-43	5.5	16.5	30-20-30
5		29-20-29	6	13	45-20-45	4.5	15.5	31-23.5-31
5		36-28-36	5	11	48-27-48	6	12.5	37.5-28.5-37.5
4		34.5-27-34.5	4	10.5	49-27-49	4	16	36-28.5-36
3.5		44-37-44	3.5	11	57.5-37-57.5	4.5	12	46-38-46
3.5		40-32-40	3.5	11	54-32-54			

MAL								TAKE-OFF
900 rpm-12		1000 rpm	900 rpm-1250 rpm-900 rpm			1100 rpm-1250 rpm-1100 rpm		
5		22.5-15-22.5	5	15.5	27-15-27	5.5	16	21-16-21
4.5		29.5-22-29.5	4.5	11.5	33.5-21.5-33.5	6	12.5	27.5-23-27.5
5		33-23-33	6	15	37-24-37	4	10	30-26-30
5.5		35-24-35	5.5	13	39-24-39	6	13.5	31-25-31
4.5		38-30-38	4.5	12	42.5-30-42.5	4.5	11	36-32-36

F I G U R E 28

B

80% NORMAL

	1000 rpm-1250 rpm-1000 rpm			800 rpm-1250 rpm-800 rpm		
s)	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degree/Sec)	Blade Angle Change (Degrees)	Decrease Pitch Rate (Degree/Sec)	Increase Pitch Rate (Degree/Sec)	Blade Angle Change (Degrees)
-33.5	5	12	19.5-15-19.5	4.5	15	30.5-15-30.5
-39.5	5	14	27.5-19-27.5	4.5	12	36-20-36
.3	5.5	16.5	30-20-30	5	16	38-21-38
5	4.5	15.5	31-23.5-31	5	14.5	42.5-24-42.5
8	6	12.5	37.5-28.5-37.5	4	12.5	45-29-45
7	4	16	36-28.5-36	4	11.5	46-29-46
-57.5	4.5	12	46-38-46	4	11.5	54-38-54

TAKE-OFF

	1100 rpm-1250 rpm-1100 rpm			1050 rpm-1250 rpm-1050 rpm		
7	5.5	16	21-16-21	5.5	15	23.5-16-23.5
.5-33.5	6	12.5	27.5-23-27.5	4.5	12	29.5-23-29.5
/	4	10	30-26-30	5.5	11	33-25-33
9	6	13.5	31-25-31	6.5	15	32.5-26-32.5
-42.5	4.5	11	36-32-36	4	13	40-33-40

28

A

Propeller rpm Setting	1130				
Power Lever Movement	Flight Idle-Normal-Flight Idle			Flight Idle-Take-off-Fl	
Altitude & Airspeed	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Se
Ground	2.5	3	15-17-15	6	5.5
5000' and 150 mph	10.5	5	17-23.5-17	10	5
5000' and 240 mph	4	5	19-26-19	3.5	5
10000' and 150 mph	6	5.5	17-29-17	6	6
10000' and 240 mph	4	6	26-33.5-26	3.5	4.5
20000' and 150 mph	2.5	4	22.5-32.5-22.5		
20000' and 205 mph	2	3	34.5-41.5-34.5		
30000' and 185 mph	1	2	29.5-36.5-29.5		

1130

e-Normal-Flight Idle		Flight Idle-Take-off-Flight Idle			Flight Idle-Normal-Flight		
Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	
3	15-17-15	6	5.5	15-19-15	0	0	
5	17-23.5-17	10	5	16.5-23-16.5	9.5	4.5	[illegible]
5	19-26-19	3.5	5	20-28-20	4	4.5	
5.5	17-29-17	6	6	17.5-31-17.5	4	6	[illegible]
6	26-33.5-26	3.5	4.5	27.5-36-27.5	3	5	[illegible]
4	22.5-32.5-22.5				2	5.5	
3	34.5-41.5-34.5				2	4	
2	29.5-36.5-29.5				4	4.5	

FIGURE 29 : E

B

POWER LEVER TRANSIENTS

1250

t	Flight Idle-Normal-Flight Idle			Flight Idle-Take-off-Flight Idle		
	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)
	0	0	15-15-15	2	3	15-16-15
[illegible].5	9.5	4.5	17-21-17	10	5.5	17-24-17
	4	4.5	15-25-15	4.5	5	15-28-15
[illegible].5	4	6	17-25-17	3	3.5	21.5-27.5-21.5
[illegible].5	3	5	24-30.5-24	3.5	5.5	24.5-32-24.5
	2	5.5	19.5-27.5-19.5			
	2	4	31-37.5-31			
	4	4.5	27.5-33-27.5			

E 29

TABULATION-73E0B1 PROPELLER FEATHER TIMES

Altitude and Airspeed	Electrical Feather(Secs)	Mechanical Feather(Secs)	Unfeather (Secs)
5000' and 150 mph	6.0	10.0	13
5000' and 240 mph	4.1	4.6	13
10000' and 150 mph	5.9	6.1	12
10000' and 240 mph	N O	D A T A	
20000' and 150 mph	3.6	7.4	12
20000' and 205 mph	5.4	6.5	12
30000' and 185 mph	N O	D A T A	

FIGURE 30

TABULATION-73EGB1 PROPELLER REVERSING TIME

Taxi Speed (mph)	Power Reverse Initiated From	Time to Reverse (Sec)
20	Flight Idle	1.9
20	Normal	1.4
20	Take-off	1.4
40	Flight Idle	1.9
40	Normal	1.6
40	Take-off	1.4
60	Flight Idle	1.8
60	Normal	1.5
60	Take-off	1.7

FIGURE 31

TABULATION-73EGB1 PROPELLER ATTITUDE CHECKS

Attitude	Time at Attitude	Scavenge Outlet Temperature Change (°F)
20° left about roll axis	5 mins	+8
20° right about roll axis	5 mins	+2
45° left about roll axis	30 secs	0
45° right about roll axis	30 secs	0
25° down about pitch axis with 10° left about roll axis	2 min	-3
25° down about pitch axis with 10° right about roll axis	2 min	-3
25° up about pitch axis with 10° left about roll axis	2 min	+5
25° up about pitch axis with 10° right about roll axis	2 min	+14
zero "g"	30 sec	0

FIGURE 32

TABULATION-VC86260 PROPELLER NACELLE TEMPERATURE SURVEY

Altitude & Airspeed Power Setting	Ground Flight Idle	Ground Take-off	5000' 200 mph Flight Idle	5000' 200 mph Take-off
Thermocouple Location				
Engine				
Strut Mount Pad	58	64	32	34
Accessory Gear Box	136	162	184	190
Compressor Rear Frame	324	598	346	512
Burner Case	278	554	216	322
Turbine Case Front	396	626	374	530
Turbine Case Rear	534	736	418	522
Rear Mount	90	146	40	40
Nacelle				
Firewall Beam	104	152	30	38
Propeller-Gearbox				
Control	86	180	104	106
Gearbox Skin	128	230	104	112
Lube in	138	230	142	166
Lube out	138	266	152	182
Ambient	42	42	16	16

FIGURE 33

Power Setting		60% NORMAL			60% NORMAL	
Condition Lever Movement		1000 rpm-1160 rpm-1000 rpm			850 rpm-1160 rpm-1000 rpm	
Altitude & Airspeed	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degrees/Sec)	Blade Angle Chang (Degr
Ground				2.5	6.5	
6500' and 150 mph	5	13.5	33-21-33	4	15.5.5	33-21
6500' and 230 mph	4	11	41-35.5-41	4	12	41-35
10000' and 150 mph	4.5	14.5	34.5-23.5-34.5	5	14.5.5	34.5-
10000' and 230 mph	3.5	10.5	42-37.5-42	3	13 .5	42-37
20000' and 150 mph	4.5	14.5	41.5-34.5-41.5	4.5	15.5.5	41.5-
20000' and 220 mph	3.5	10.5	46-41-46	4	16.5.5	46-41
30000' and 150 mph	3	12	46.5-42-46.5	3	13.5	46.5-
30000' and 165 mph	3	11	48-43.5-48	5	14	48-43

Power Setting		NORMAL			NORMAL	
Condition Lever Movement		1000 rpm-1160 rpm-1000 rpm			900 rpm-1160 rpm-1000 rpm	
Altitude & Airspeed						
Ground	2.5	8.5	17.5-13-17.5	3	10 .5	17.5-
6500' and 150 mph	3.5	14.5	39.5-30-39.5	3	14 .5	39.5-
6500' and 230 mph	3	14.5	44-38-44	3.5	12 .5	44-38
10000' and 150 mph	3	15	39.5-32-39.5	2.5	13.5	39.5-
10000' and 230 mph	2.5	16.5	46-40.5-46	2	12.5.5	46-40

A

TABULATION-VC8626C PROPELLER CONDITION LEVER TRANSIENTS

60% NORMAL 80%

-1000 rpm		850 rpm-1160 rpm-850 rpm			1000 rpm-1160 rpm-1000 rpm		
e ate s/Sec)	Blade Angle Change (Degrees)	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees
		2.5	6.5	18-12-18	5	4.5	15-12-1
5	33-21-33	4	15.5	40-21-40	4	15.5	36-24.5-
	41-35.5-41	4	12	46-36-46	5	9.5	42-37-4
5	34.5-23.5-34.5	5	14.5	41-23.5-41	4	15.5	37-28-3
5	42-37.5-42	3	13	47-37-47	4	11.5	43-38.5-
5	41.5-34.5-41.5	4.5	15.5	49.5-35-49.5	4.5	16	45.5-38.
5	46-41-46	4	16.5	51.5-41-51.5	4	13	47.5-42.
	46.5-42-46.5	3	13.5	54-42-54			
	48-43.5-48	5	14	54.5-44-54.5			

NORMAL TAKE-

-1000 rpm		900 rpm-1160 rpm-900 rpm			1100 rpm-1160 rpm-1100 rpm		
5	17.5-13-17.5	3	10	24-13-24	1.5	5	16-13-1
5	39.5-30-39.5	3	14	44.5-31-44.5	2.5	10.5	37-33.5-
5	44-38-44	3.5	12	47-38-47	3.5	14.5	42-40-4
	39.5-32-39.5	2.5	13.5	45-32-45	3	11	37-35-3
5	46-40.5-46	2	12.5	49-41-49	2.5	18.5	44-42-4

F I G U R E 34

B

80% NORMAL

	1000 rpm-1160 rpm-1000 rpm			850 rpm-1160 rpm-850 rpm		
	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Decrease Pitch Rate (Degrees/Sec)	Increase Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)
	5	4.5	15-12-15	2.5	8	23-12-23
	4	15.5	36-24.5-36	3.5	16	44-26.5-44
	5	9.5	42-37-42	4	12.5	46.5-37-46.5
11	4	15.5	37-28-37	4	13.5	45-28.5-45
	4	11.5	43-38.5-43	2	11	48.5-39-48.5
9.5	4.5	16	45.5-38-45.5	3	16	54.5-38.5-54.5
1.5	4	13	47.5-42.5-47.5	3	15.5	54-43-54
54.5						

TAKE-OFF

	1100 rpm-1160 rpm-1100 rpm			1050 rpm-1160 rpm-1050 rpm		
	1.5	5	16-13-16	3	9.5	18-12-18
44.5	2.5	10.5	37-33.5-37	3	13.5	40-34-40
	3.5	14.5	42-40-42	4	11	43.5-39-43.5
	3	11	37-35-37	2.5	11.5	41-35-41
	2.5	18.5	44-42-44	2	12.5	45.5-42-45.5

R E 34

Propeller rpm Setting	1015				
Power Lever Movement	Flight Idle-Normal-Flight Idle			Flight Idle-Take-off-	
Altitude & Airspeed	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/
Ground	4.5	2	12-15-12	7	3
6500' and 150 mph	18	6	12-38.5-12	19	5
6500' and 230 mph	6	3.5	34.5-42.5-34.5	5.5	3
10000' and 150 mph	18.5	5	12-38.5-12	17	4
10000' and 230 mph	4.5	4	34.5-44-34.5	4.5	3.5
20000' and 150 mph	6	4.5	24.5-44.5-24.5		
20000' and 220 mph	2	3.5	39.5-47-39.5		
30000' and 150 mph	5	3	37-45-37		
30000' and 165 mph	4.5	2	40.5-46.5-40.5		

A

TABULATION - VC86260 PROPELLER POWER LEVER TRANSIENTS

1015

-Normal-Flight Idle		Flight Idle-Take-off-Flight Idle			Flight Idle-Normal-Fligl	
Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec
2	12-15-12	7	3	12-20-12	0	0
6	12-38.5-12	19	5	12-40.5-12	28.5	6
3.5	34.5-42.5-34.5	5.5	3	37.5-43-37.5	2.5	4
5	12-38.5-12	17	4	12-41.5-12	31.5	5.5
4	34.5-44-34.5	4.5	3.5	37.5-46-37.5	4	4.5
4.5	24.5-44.5-24.5				19	7.5
3.5	39.5-47-39.5				2.5	4
3	37-45-37				6	4
2	40.5-46.5-40.5				5	3.5

F I G U R E 35

POWER LEVER TRANSIENTS

1160

1-Fligh		Flight Idle-Normal-Flight Idle			Flight Idle-Take-off-Flight Idle		
se Rate es/Sec)		Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)	Increase Pitch Rate (Degrees/Sec)	Decrease Pitch Rate (Degrees/Sec)	Blade Angle Change (Degrees)
		0	0	12-12-12	6.5	5	12-13-12
		28.5	6	12-31-12	26	5	12-32-12
	.5	2.5	4	37-39.5-37	3	4	38-41-38
.5		31.5	5.5	12-32.5-12	28.5	6.5	12-35-12
.5	.5	4	4.5	32-40-32	4	4.5	33-41.5-33
.5		19	7.5	12-38-12			
		2.5	4	36-42.5-36			
		6	4	30-40-30			
.5		5	3.5	36.5-42-36.5			

I R E 35

C

TABULATION-VC86260 PROPELLER FEATHER TIMES

Altitude and Airspeed	Electrical Feather(Sec)	Mechanical Feather(Sec)	Unfeather (Sec)
Ground	3.5	-	9.6
6500' and 150 mph	4.6	25.2	16.4
6500' and 230 mph	3.2	13.2	7.4
10000' and 150 mph	4.0	20	13
10000' and 230 mph	4.0	19	12
20000' and 150 mph	4.0	12	16
20000' and 220 mph	3.0	11	11
30000' and 150 mph	5.0	11	12
30000' and 165 mph	4.0	10	8

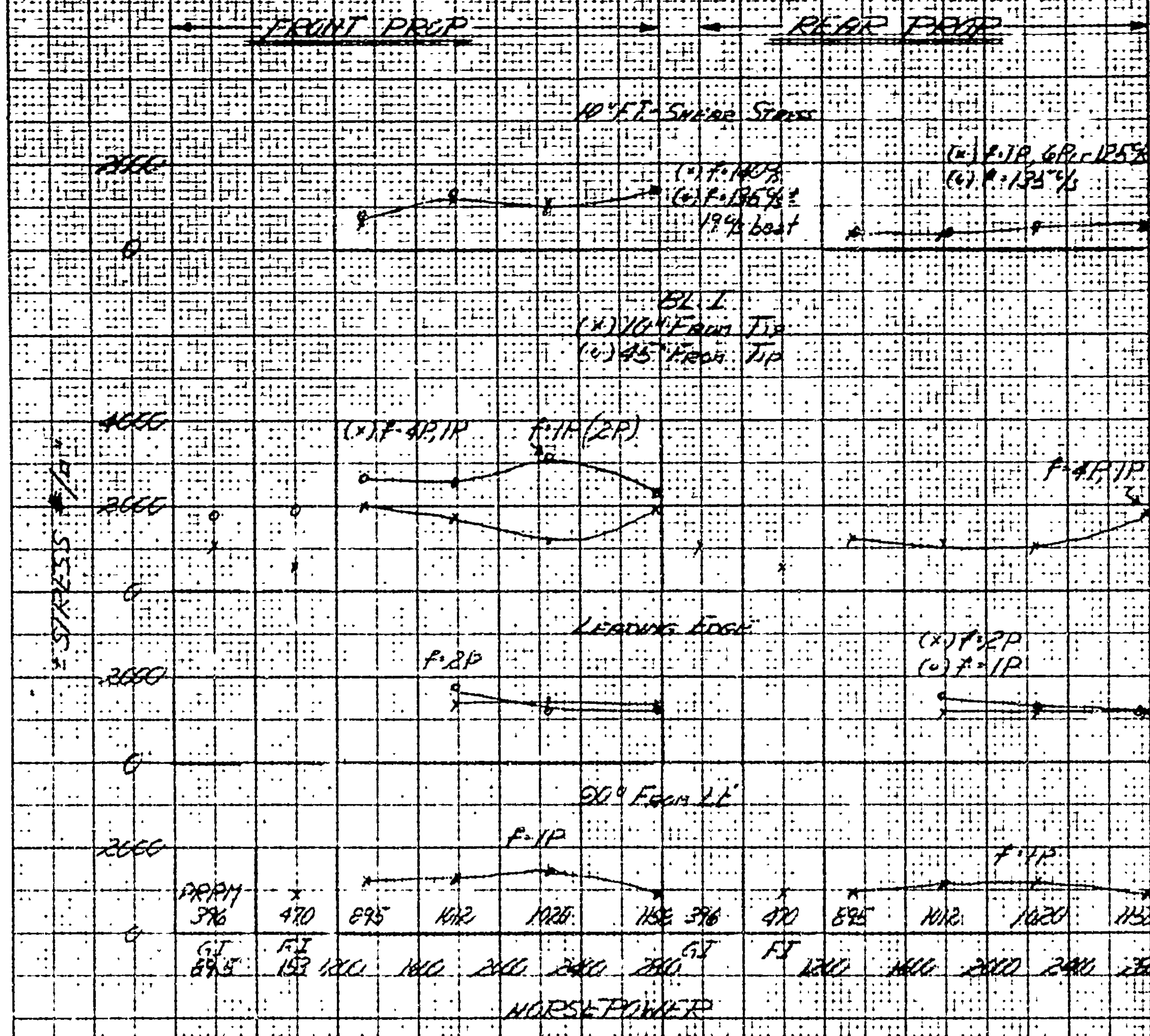
FIGURE 36

TABULATION-VC86260 PROPELLER REVERSING TIMES

Taxi Speed (mph)	Power Reverse Initiated From	Blade Angle Reverse Initiated From	Time to Reverse (Sec)
20	Flight Idle	12.5°	1.5
20	Normal	19°	1.45
20	Take-off	12.5°	1.3
40	Flight Idle	12.5°	1.55
40	Normal	18.5°	1.45
40	Take-off	13.5°	1.3
60	Flight Idle	12°	1.45
60	Normal	17°	1.55
60	Take-off	15°	1.40

FIGURE 37

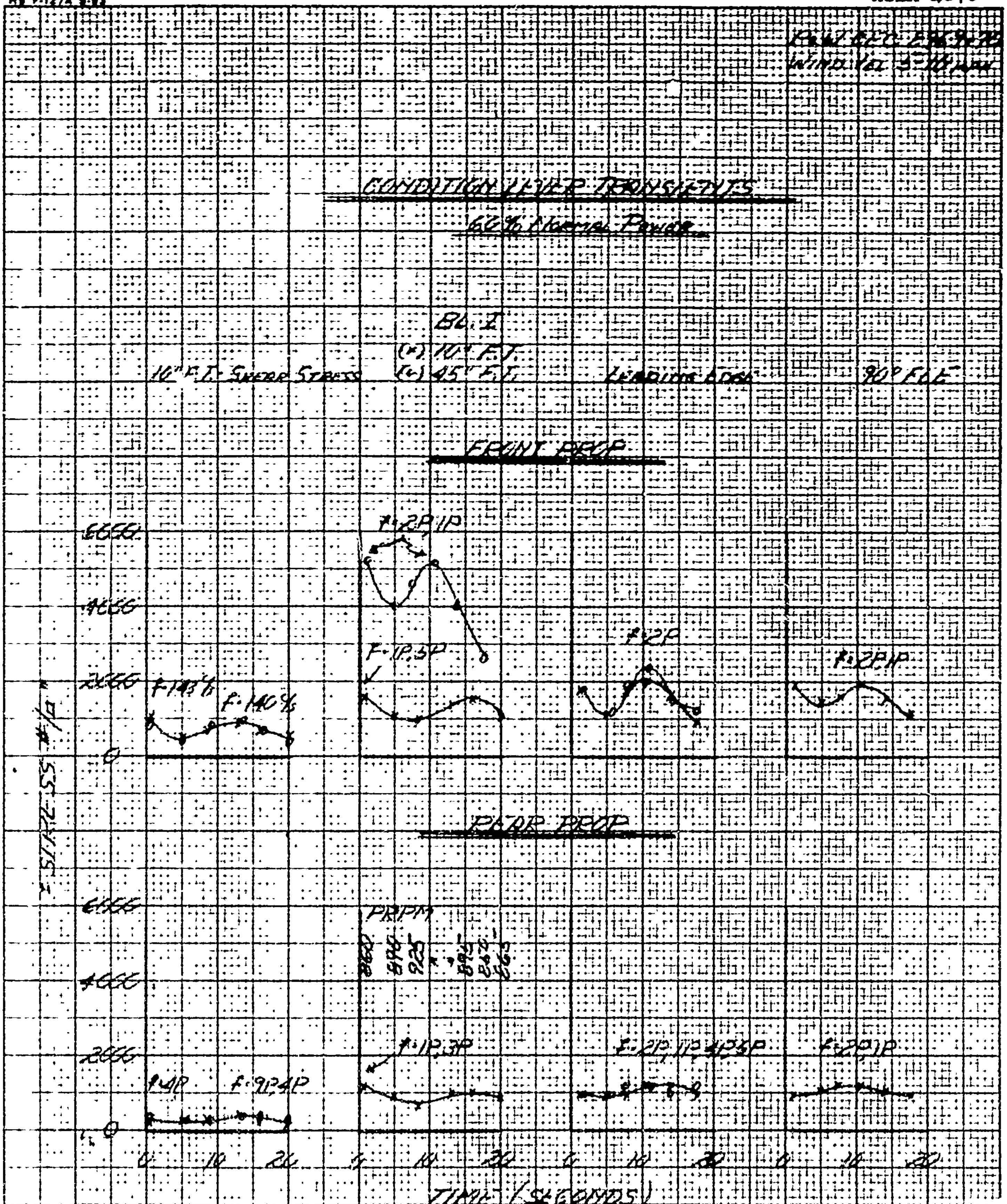
HS F-157A 8-53



HUB V086260	ENGINE NO. GE E 260131	TYPE T64 GE-1	DRIVE 12.08:1
BLADE 2FB14A3-6 2FL14A3-6			APPROVED
DIAMETER 13'6"	TIP, BLADE & SHANK STRESS ON U.R.C. B-17 DURING INTO-THE-WIND GROUND TESTS		DRAWN BY F.T.
AIRPLANE URC B-17	HAMILTON STANDARD DIVISION OF UNITED AIRCRAFT CORPORATION WINDSOR LOCKS, CONNECTICUT, U.S.A.		DATE 3-2-66
STAND E. Hartford Clam			CURVE NO. 4628

FIGURE 37

HS F-127A 9-53



HUB VC 86260 ENGINE NO. GE-E 260131 TYPE T64-GE-1 DRIVE

BLADE 21D1443-6 / 22D1443-6 APPROVED

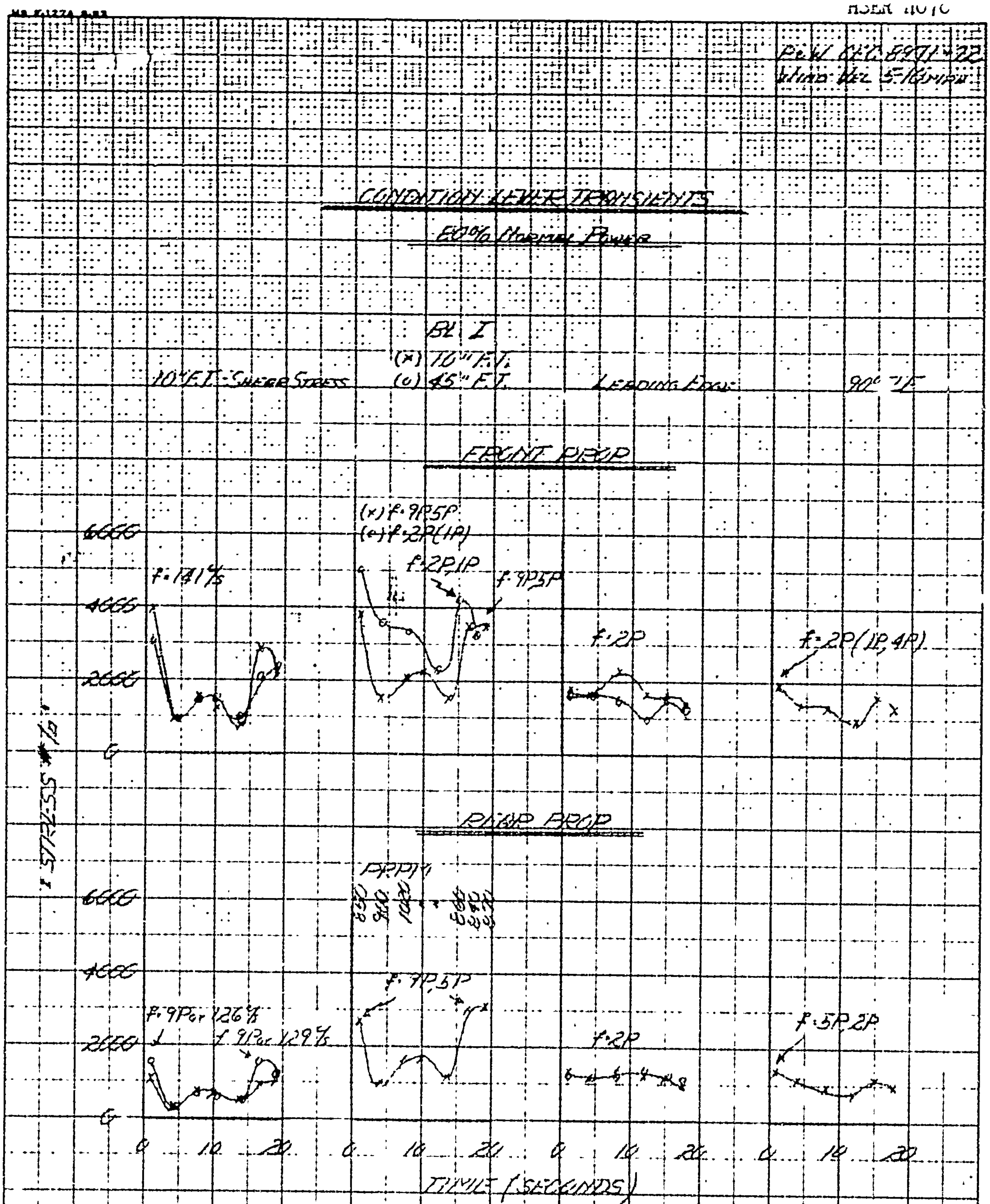
TIP BLADE & SHANK STRESSES ON U.A.C. B-17

DIAMETER 13'6" DURING INTO-THE-WIND GROUND TESTS DRAWN BY F.T.

AIRPLANE U.A.C. B-17 DATE 3-2-66

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U.S.A.

STAND E. Hartford Conn. CURVE NO. 16280



HUB VC66260 ENGINE NO. GE-E 260131 TYPE T64-GE-1 DRIVE 12.08:1

BLADE 2FD14A3-6 / 2FD14A3-6 APPROVED

TIP, BLADE & SHANK STRESSES ON LRC B-17 DURING INTO-THE-WIND GROUND TESTS

DIAMETER 13'6" DRAWN BY F.T.

AIRPLANE LRC B-17 DATE 9-2-66

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

STAND E. HARTFORD, CONN. CURVE NO. 462

FIGURE !

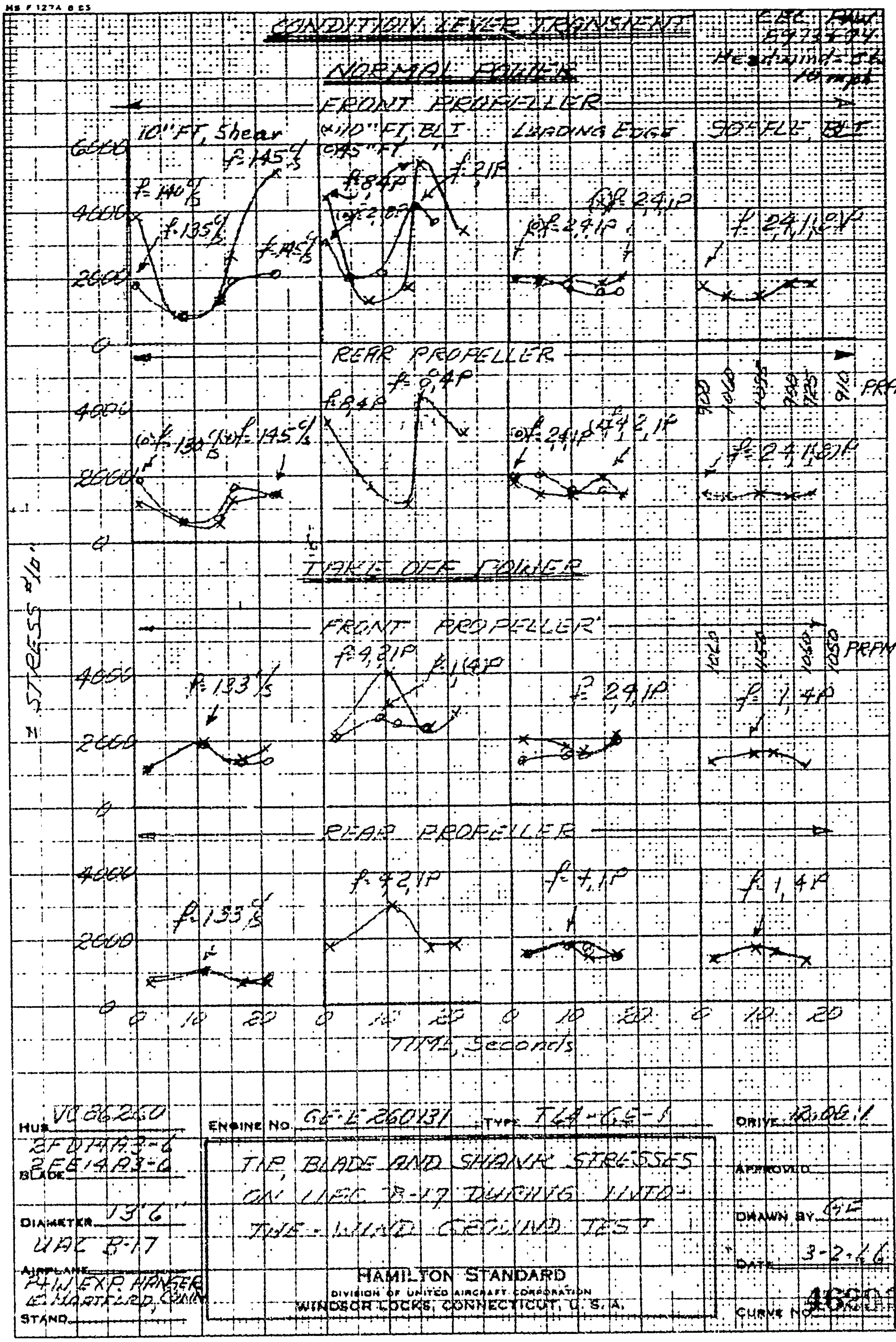
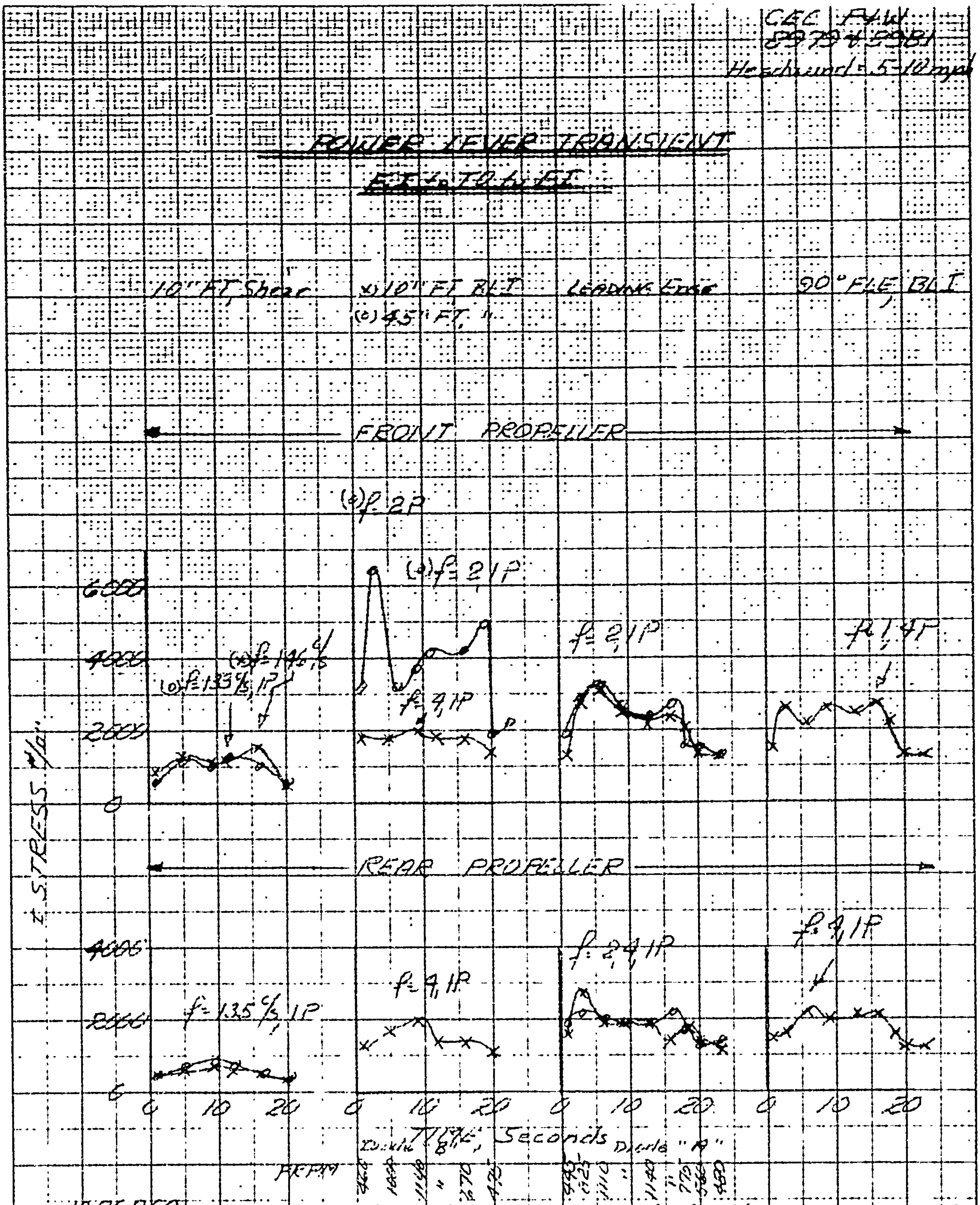

CONDITION LEVER TRANSIENT
NORMAL POWER
FRONT PROPELLER
10" FT, Shear
10" FT, BLT
Leading Edge
50" FLE BLT
REAR PROPELLER
TAKE-OFF POWER
FRONT PROPELLER
REAR PROPELLER
STRESS
RPM
TIME, Seconds
HUB VC 66260
BLADE 2FD14A3-6 2FE14A3-6
DIAMETER 13'6"
AIRPLANE UAC B-17
STAND P4W EXP. HANGER E. HARTFORD, CONN
ENGINE NO. GE-E 260X31 TYPE T4-G.E.-1
DRIVE
APPROVED
DRAWN BY GE
DATE 3-2-46
TIP, BLADE AND SHANK STRESSES ON UAC B-17 DURING INTO-THE-WIND GROUND TEST
HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.
CURVE NO.

FIGURE 11



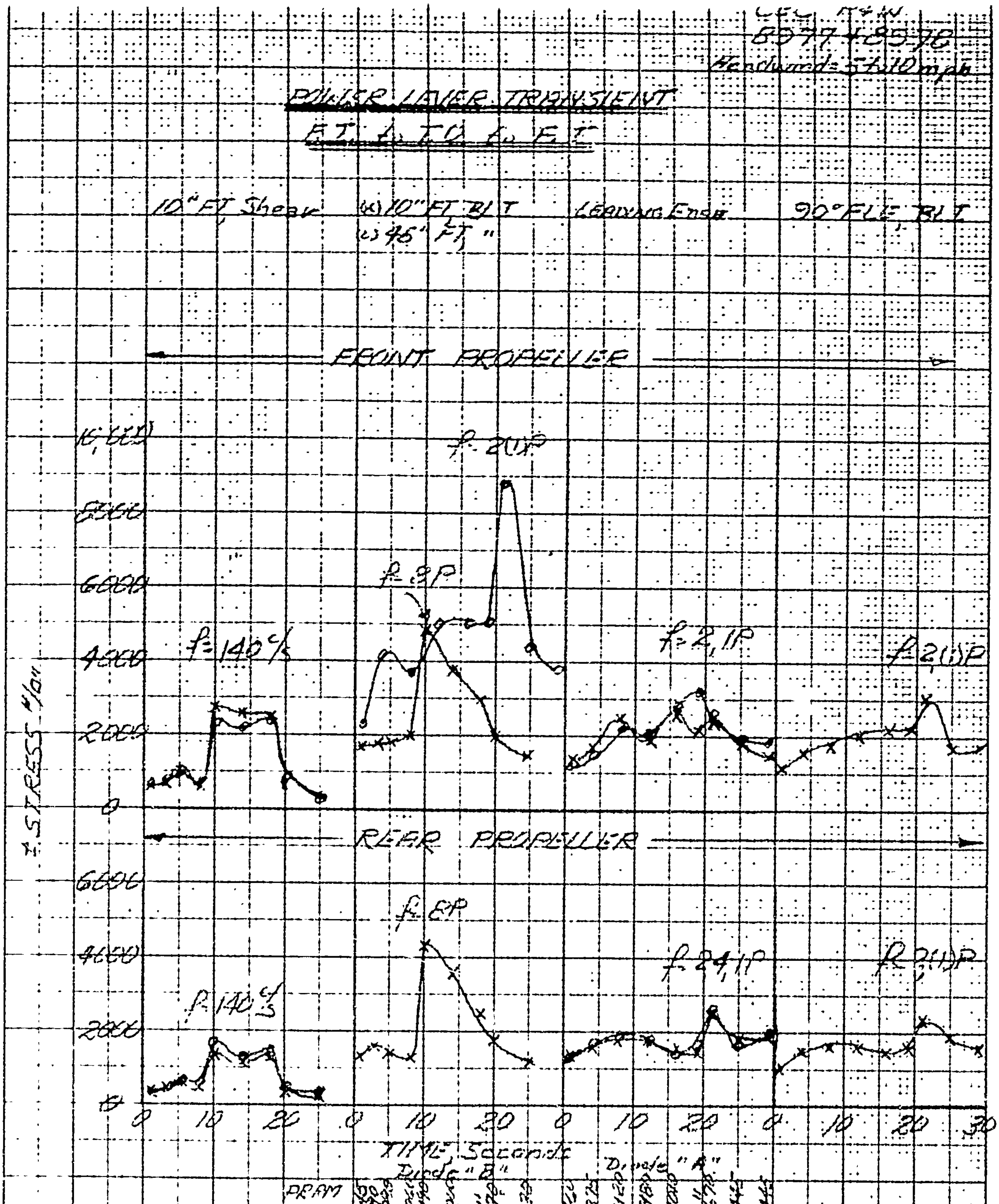
HUB VC86260
2FE14A3-6
2FE14A3-6
BLADE
13'6"
DIAMETER
UAC B-17
AIRPLANE
FYW EXP. HANGER
E. HARTFORD, CONN.
STAND

ENGINE NO. GE260131 TYPE T-64-GE-1

TIP BLADE AND SHANK STRESSES
ON UAC B-17 DURING INTO-
THE-WIND GROUND TEST

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

DRIVE 12.08:1
APPROVED
DRAWN BY GF
DATE 3-2-66
CURVE NO. 4620



HUB 1C56260

BLADE 2FD14A3-C, 2FE14A3-6

DIAMETER 13'6"

AIRPLANE UAC B-17

STAND P+W EXPER. HANGAR E. HARTFORD CONN

ENGINE NO. GE-E 26013(?) TYPE T-64 GE-1

DRIVE 12.66:1

TIP, BLADE AND SHANK STRESSES ON UAC B-17 THRUST-INTO-THE-WIND GROUND TEST

APPROVED

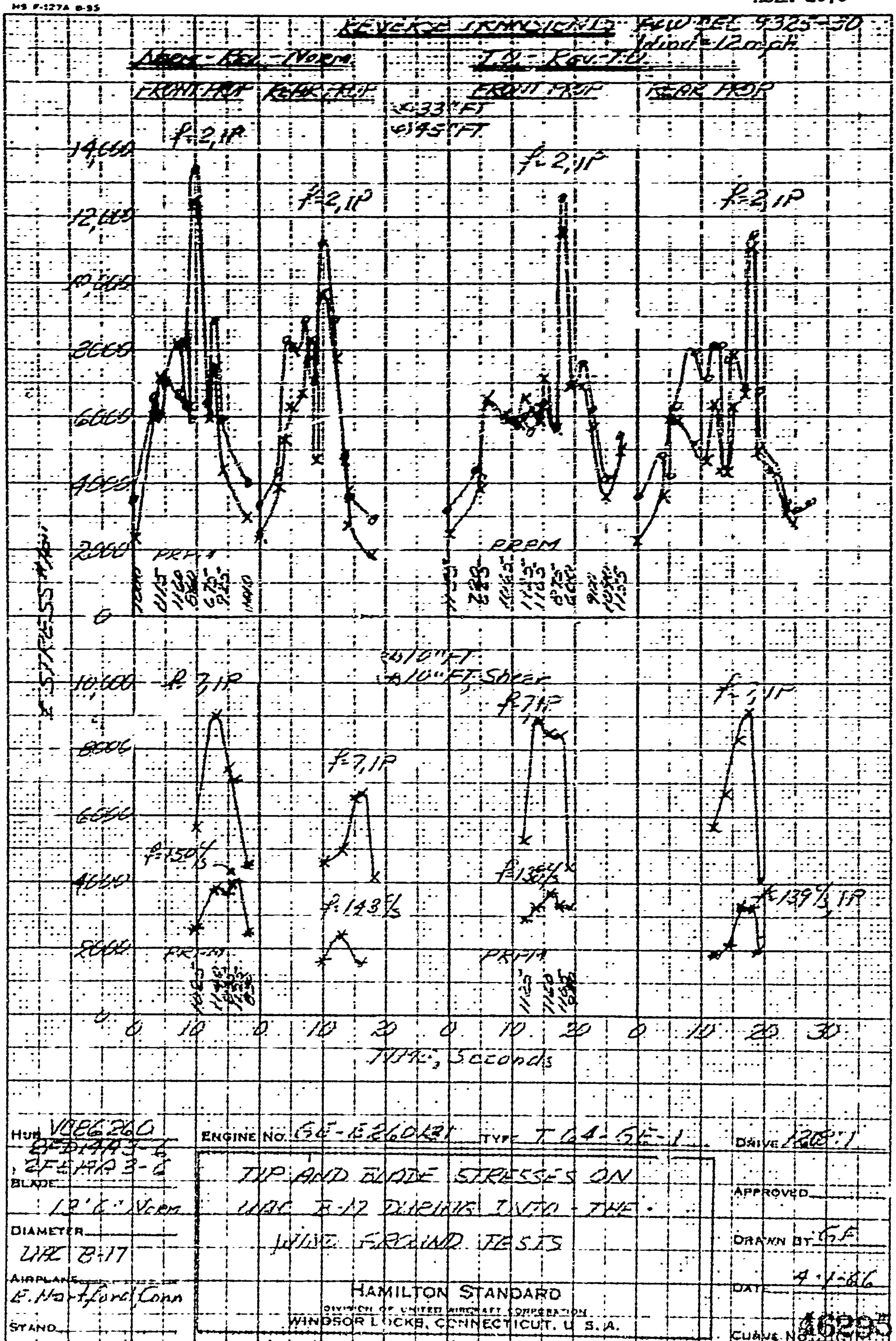
DRAWN BY GF

DATE 3-2-66

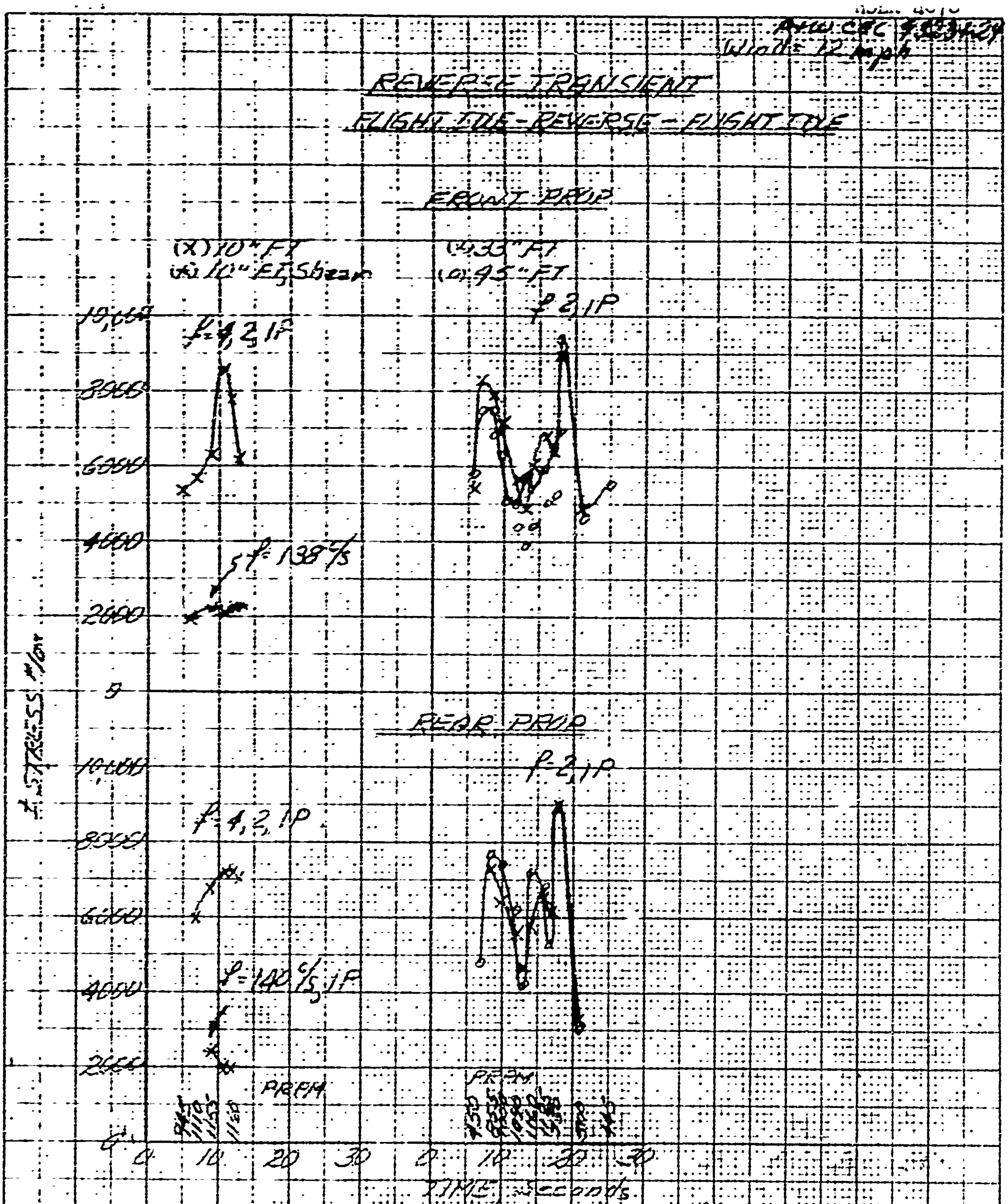
HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

CURVE NO. 4690?

FIGURE

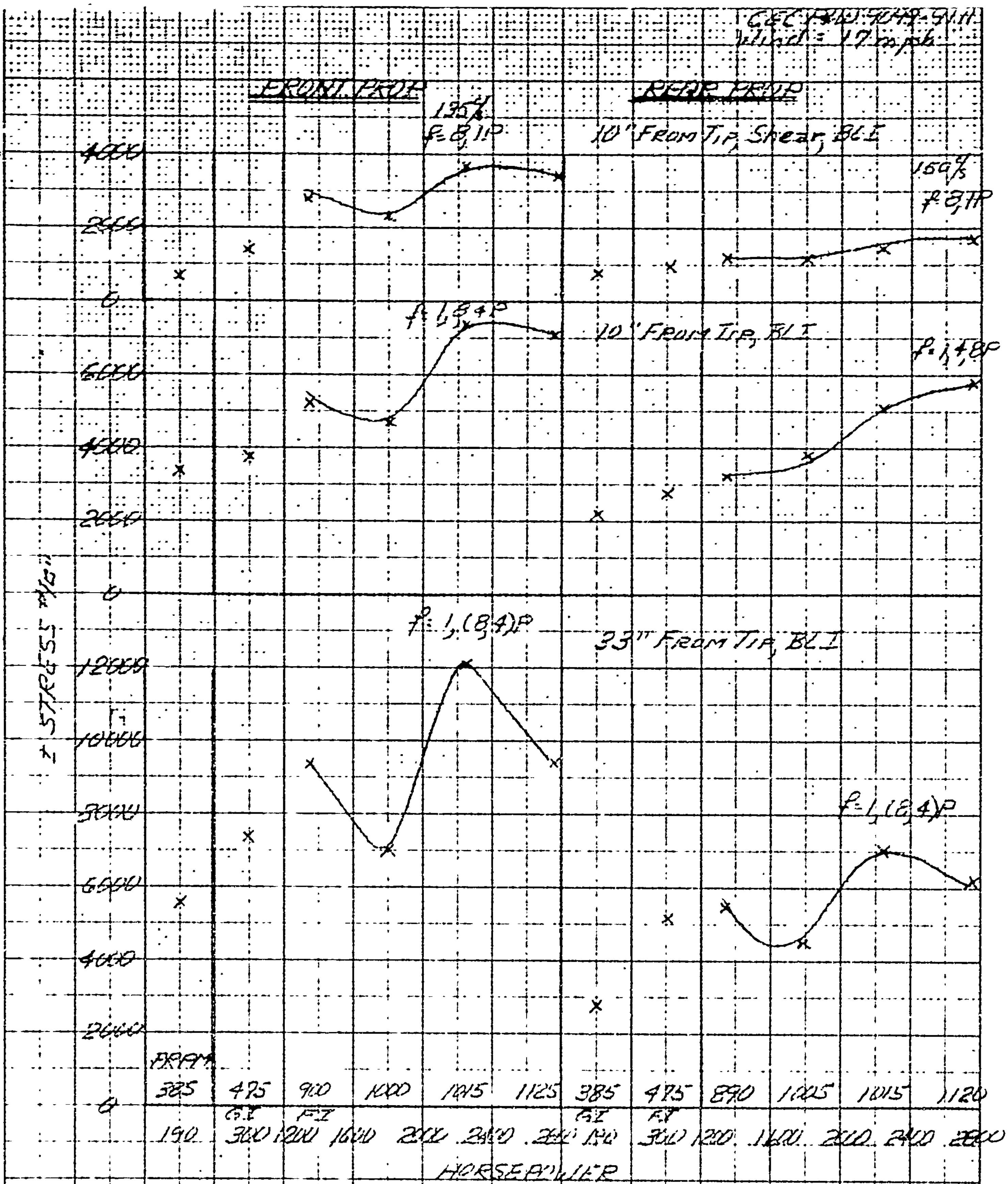

HS F-127A 8-55
REVERSE TRANSIENTS
Wind = 12 mph
FRONT PROP
REAR PROP
f-2,1P
f-7,1P
PRPM
TIME, Seconds
0
10
20
30
HUB
ENGINE NO.
TYPE T64-GE-1
DRIVE 120:1
BLADE
DIAMETER
AIRPLANE
E. Hartford Conn
STAND
TIP AND BLADE STRESSES ON
UAC B-17 DURING INTO-THE-
WIND GROUND TESTS
HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U.S.A.
APPROVED
DRAWN BY GF
DATE 4-1-66
CURVE NO.

FIGURE



HUB VC96260	ENGINE NO. GE-E260131	TYPE T64-GE-1	DRIVE T2B-1
BLADE 2FD14A3-6 / 2FC14A3-6	TIP AND BLADE STRESSES ON UAC B-17 DURING INTO-THE-WIND GROUND TESTS		APPROVED
DIAMETER 13'6" nom.			DRAWN BY GF
AIRPLANE UAC B-17	HAMILTON STANDARD DIVISION OF UNITED AIRCRAFT CORPORATION WINDSOR LOCKS, CONNECTICUT, U. S. A.		DATE 4-1-66
STAND E. Hartford, Conn.			CURVE NO. 46901

FIGURE 89



HUB VC 86260

BLADE 2FD14A3-6(F) 2FE14B3-6(R)

DIAMETER 13'6" Nom.

AIRPLANE UAC B-17

STAND E. Hart.ford, Conn.

ENGINE NO. GE-E260131 TYPE J-64-GE-1

DRIVE 12.08:1

TIP AND BLADE STRESSES ON UAC B-17 DURING 90° CROSSWIND GROUND TESTS

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

APPROVED

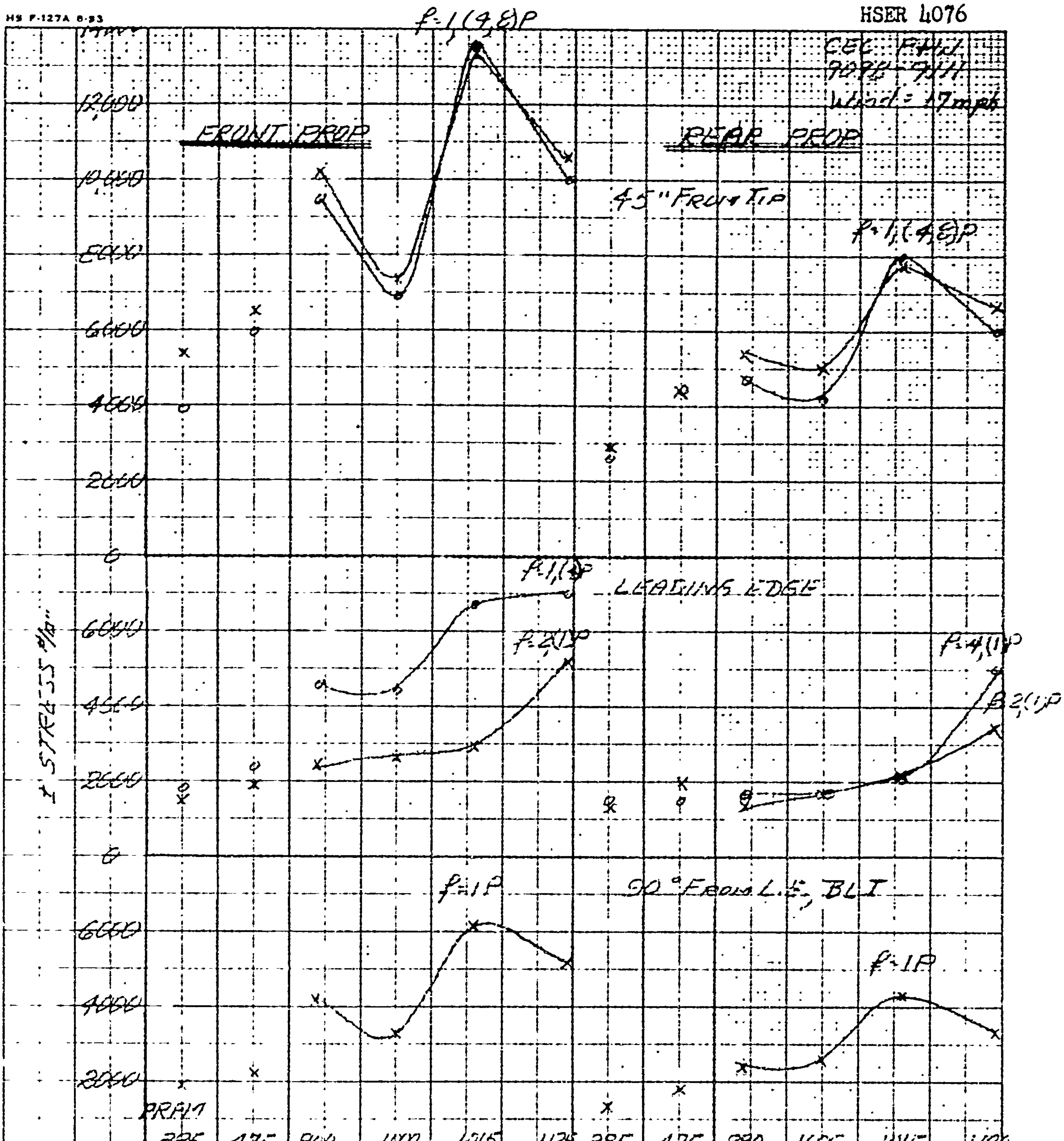
DRAWN BY GF

DATE 3-22-46

CURVE NO. 46291

FIGURE 90

HS F-127A 6-53



HUB	VC 86260	ENGINE NO	GE-E 260131	TYPE	T 64-GE-1
DRIVE	1208:1				

BLADE: 2FD14A3-6(F) 2FE14A3-6(R)

DIAMETER: 13'6" Nom

AIRPLANE: URC B-17

STAND: E. HARTFORD, CONN

BLADE AND SHANK STRESSES ON URC B-17 DURING 90° CROSSWIND GROUND TESTS

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

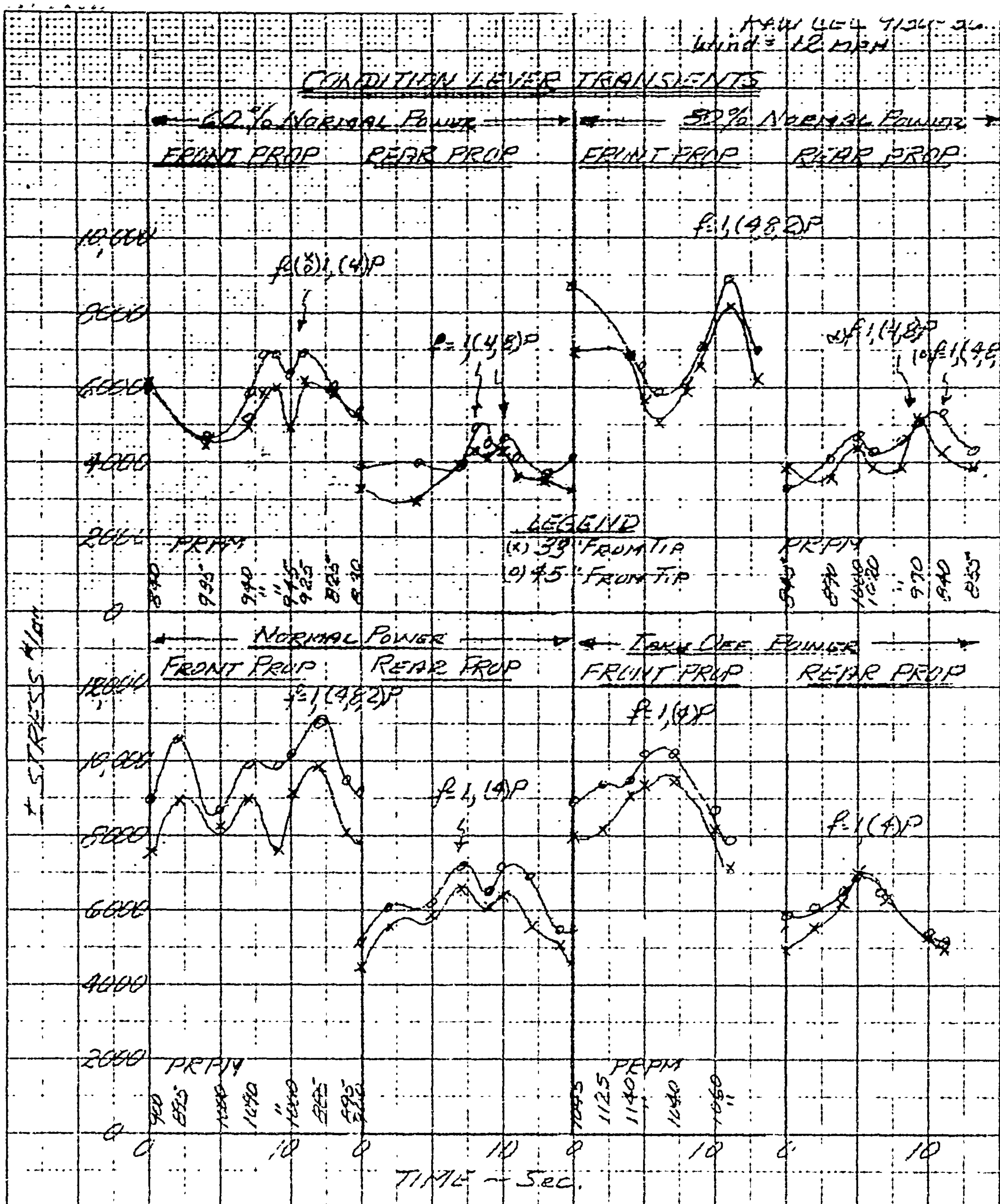
APPROVED

DRAWN BY GF

DATE 5-28-66

CURVE NO 46295

FIGURE 7



HUB VC86260 ENGINE NO. GE-E260131 TYPE T64-GE-1 DRIVE 12.08:1

BLADE 2FD14A3-6 (F) 2FE14A3-6 (R)

DIAMETER 13'6" (Nom.)

AIRPLANE UAC B-17

STAND E. HARTFORD CONN

BLADE STRESSES ON U.A.C. B-17 DURING 90° CROSSWIND GROUND TESTS

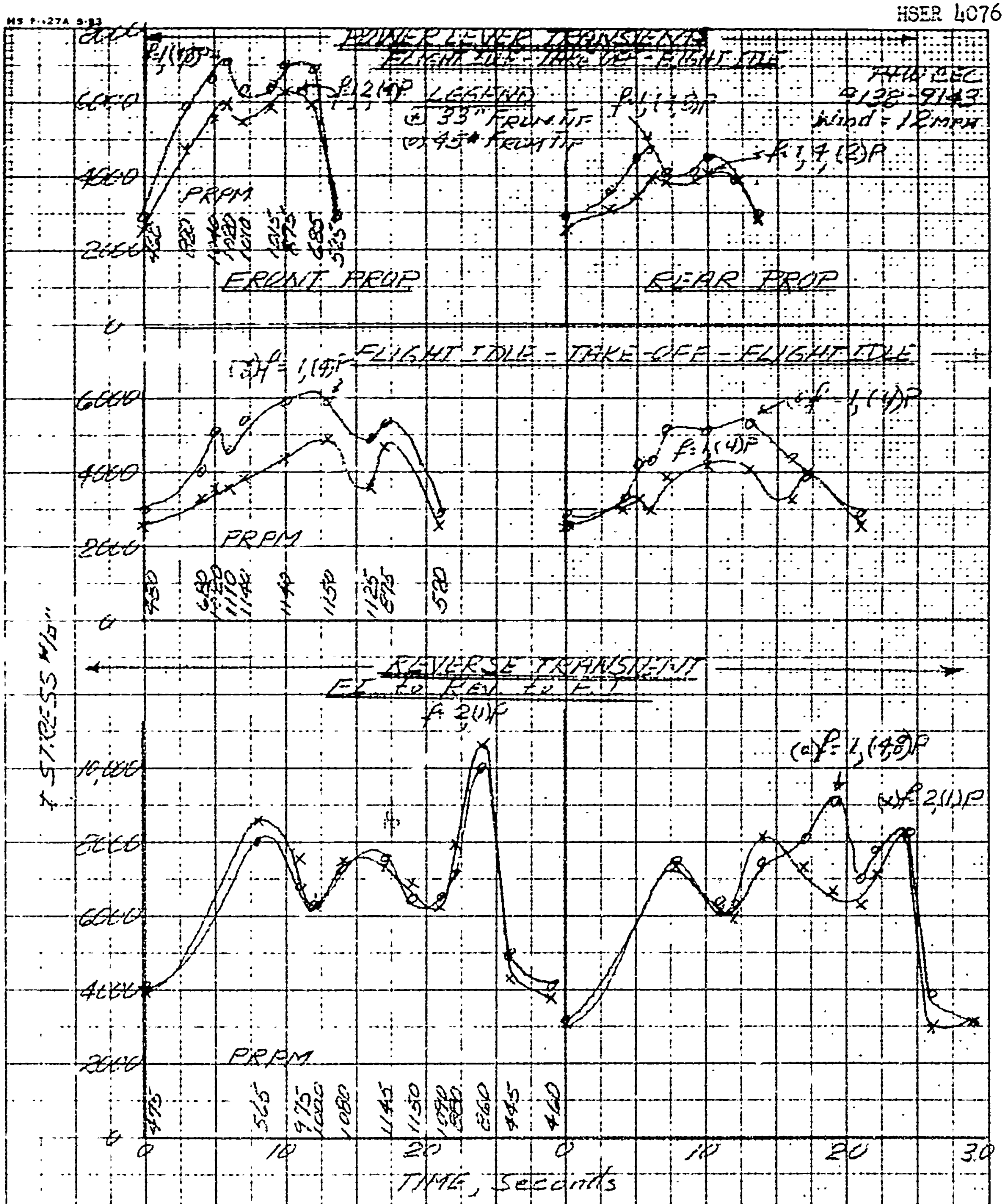
APPROVED

DRAWN BY GF

DATE 3-29-64

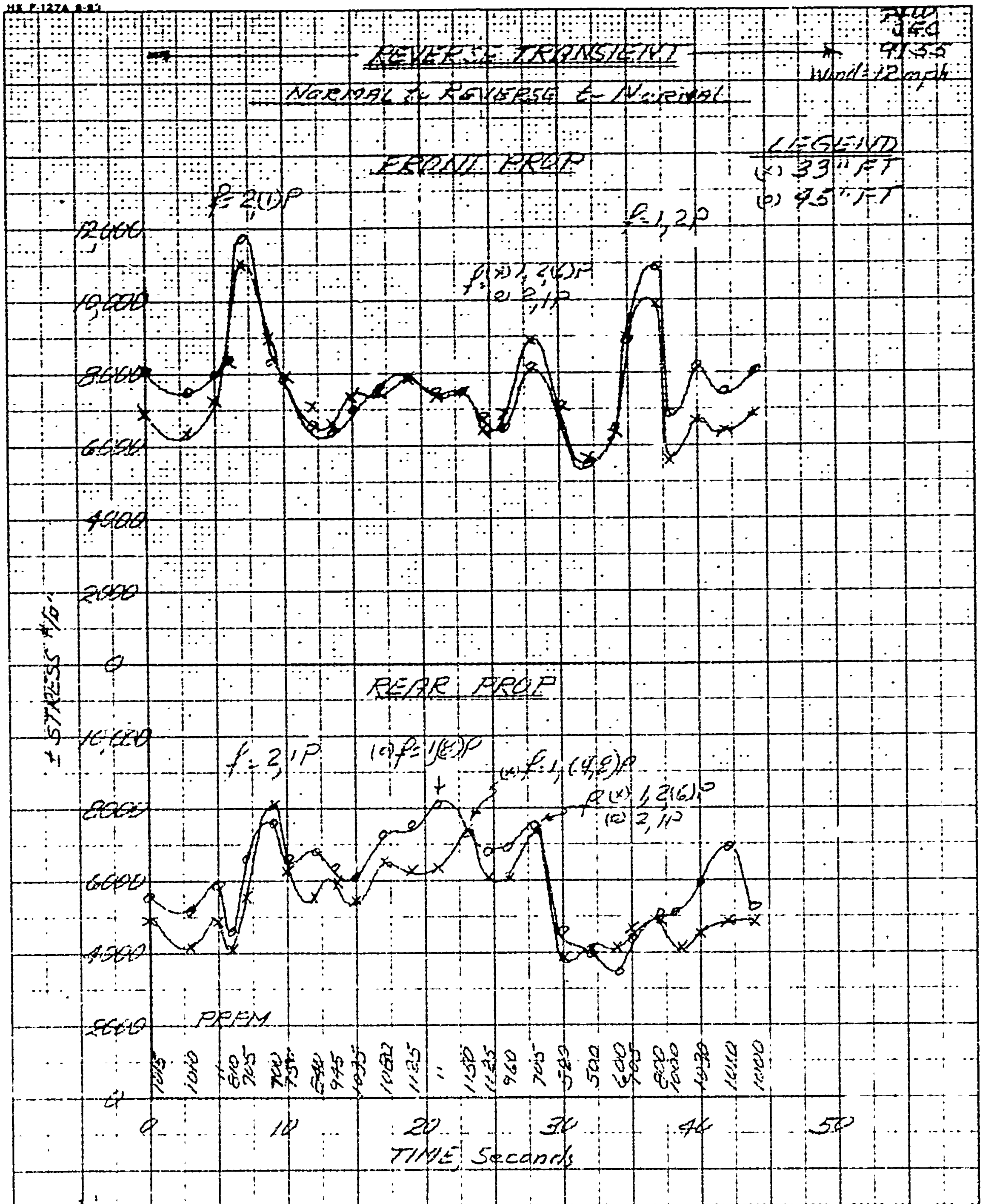
HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

CURVE NO. 4629C

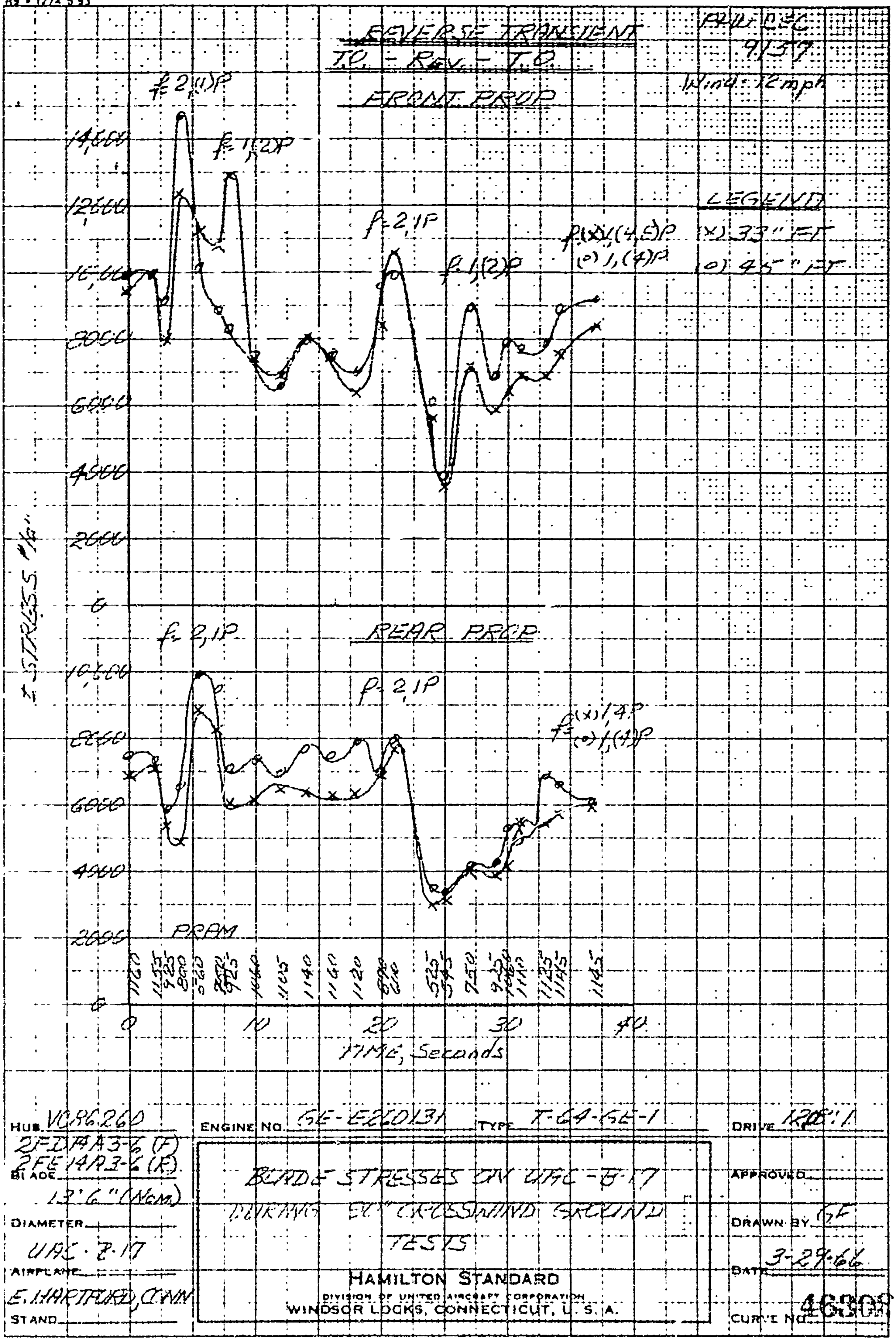


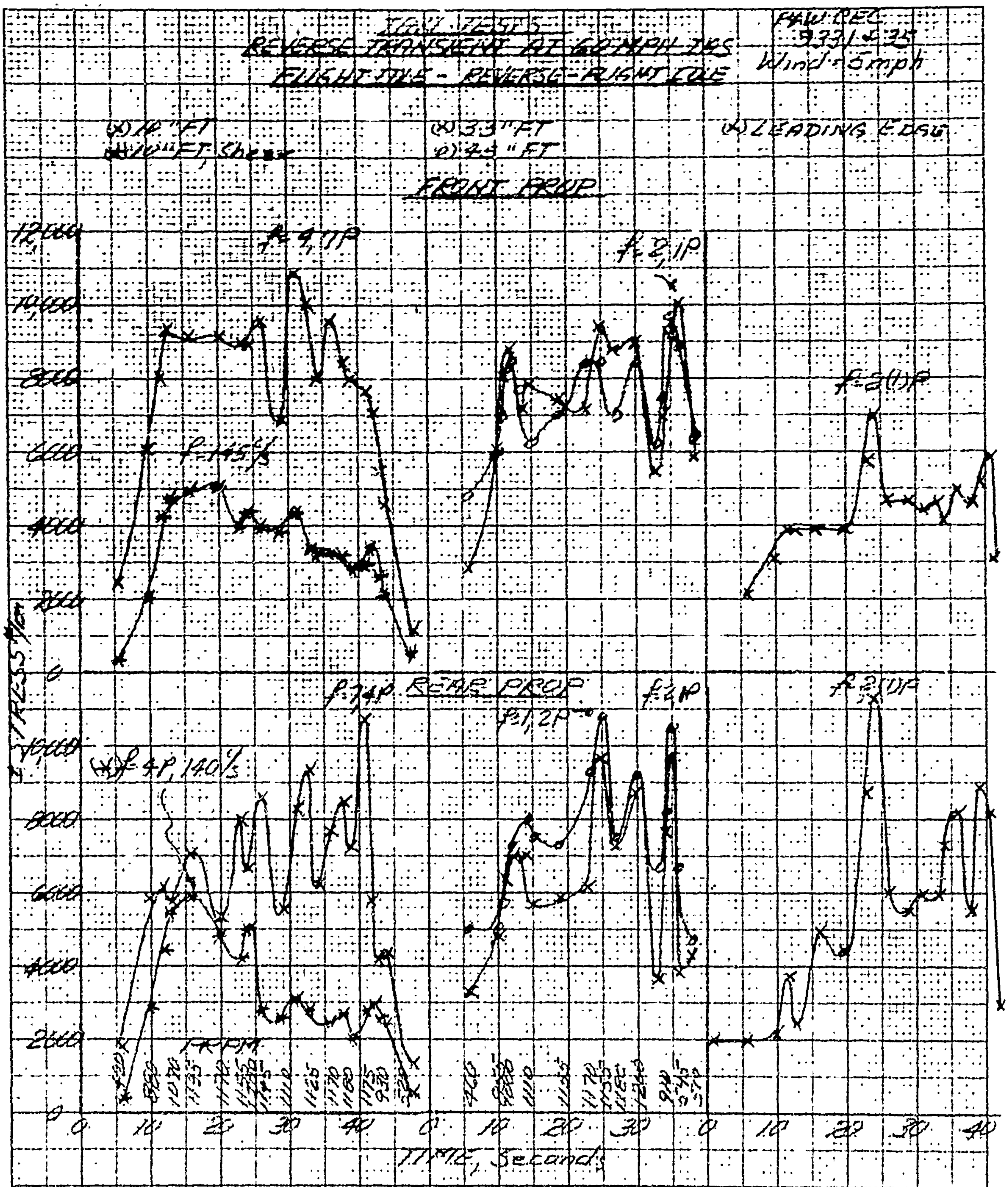
HUB V86260
ENGINE NO GE-E260131
TYPE T64-GE-1
DRIVE 1x208:1
2FE14A3-6(F)
2FE14A3-6(R)
BLADE
APPROVED
BLADE STRESSES ON UAC B-17
DURING 90° CROSSWIND
GROUND TESTS
13'6" (Arm)
DIAMETER
DRAWN BY GE
UAC B-17
AIRPLANE
DATE 3-29-66
HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.
E. HARTFORD (CONN)
STAND
CURVE NO.

FIGURE 93



HUB VC 86260
ENGINE NO. GE-E260131 TYPE T-64-GE-1
DRIVE 12.8:1
BLADE 2FD14A3-6 (F) 2FE14A3-6 (R)
APPROVED
DIAMETER 13' 6" (Nom)
BLADE STRESSES ON UAC B-17 DURING 90° CROSSWIND GROUND TESTS
DRAWN BY GF
AIRPLANE U.A.C. B-17
DATE 3-29-66
STAND E. HARTFORD CONN
HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.
CURVE NO. 4630


REVERSE TRANSIENT
T.O. - Rev. - T.O.
FRONT PROP
Wind: 12 mph
LEGEND
(x) 33" FT
(o) 45" FT
f=2,1P
f=1,2P
14,000
12,000
10,000
8000
6000
4000
2000
0
± STRESS #/in²
REAR PROP
f=2,1P
10,000
8000
6000
4000
2000
PRPM
0
10
20
30
40
TIME, Seconds
HUB VCR6260
ENGINE NO. GE-E220131
TYPE T-64-GE-1
DRIVE 1.26:1
BLADE 2FE14A3-6 (F) 2FE14A3-6 (R)
DIAMETER 13'6" (Nom)
AIRPLANE UAC-B-17
STAND E. HARTFORD, CONN
BLADE STRESSES ON UAC-B-17 DURING 60° CROSSWIND GROUND TESTS
APPROVED
DRAWN BY GF
DATE 3-29-66
HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.
CURVE NO. 46808



Hub YCE6260

Engine No GE-E 260151

Type T64-GE-1

Blade 13' 6" Nom

Diameter

UAC B-17

Airplane

E. Hartford Conn

Stand

TIP AND BLADE AND SHANK STRESSES ON UAC B-17 TWANG INTO-THE-WIND GROUND TESTS

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

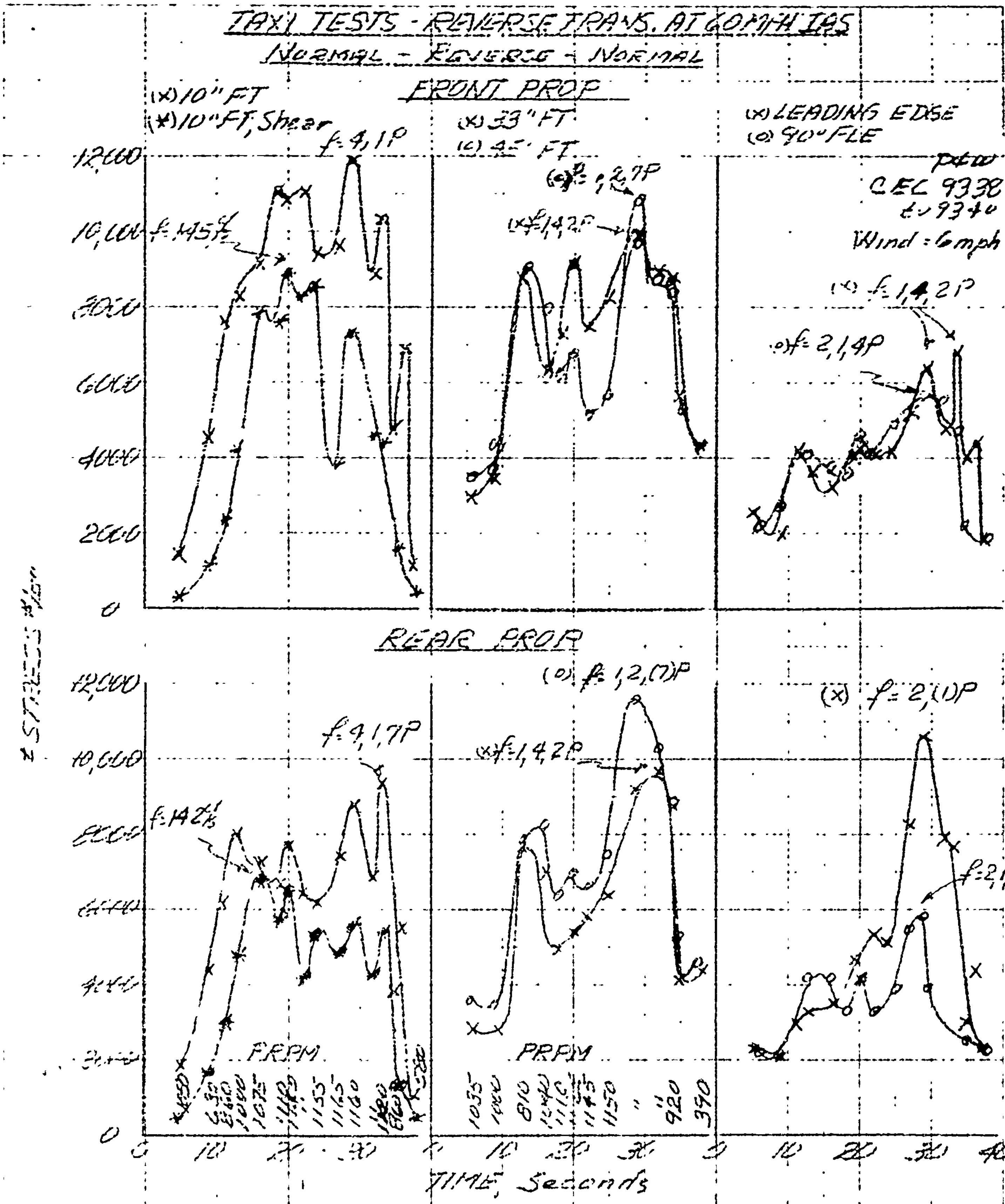
Approved

Drawn by GF

Date 4-14-66

Curve No 46296

HS F-127A 6-63



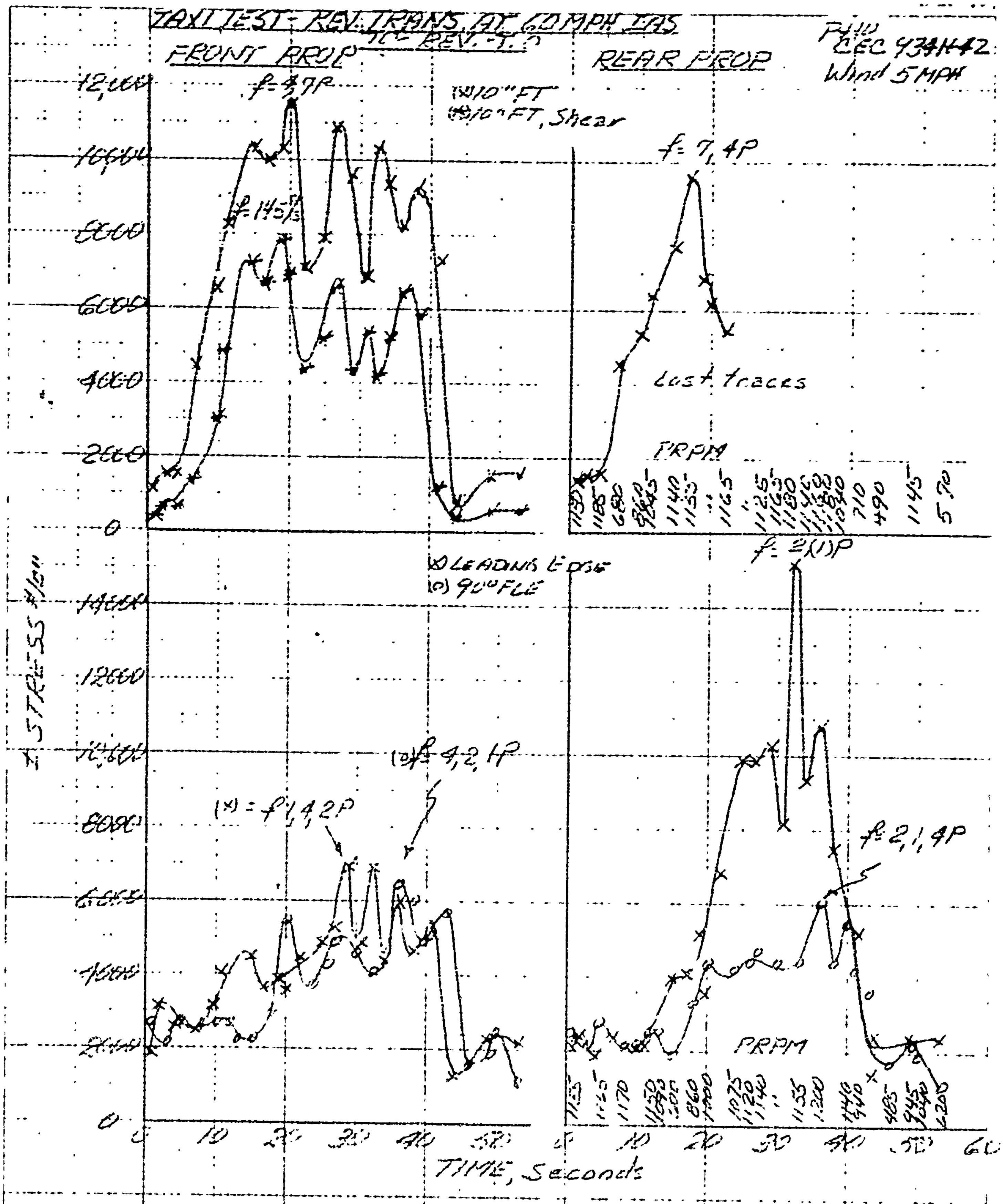
Hub: 4CF6 ...
Blade: 2FD14H3-6 2FE4A3-6
Diameter: 13'6" Nom.
Airplane: UHC B-17
Stand: E. Hartford, Conn

Engine No. GE E260131 Type T64-GE-1

TIP, BLADE AND SHANK STRESSES
ON UAC B-17 TURBINE 90° R.B.
CROSSWIND GROUND TESTS

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

Drive 1200:1
Approved
Drawn By GF
Date 9-5-66
Curve No. 46303



HUB V" ST 266	ENGINE NO. GE-E280131	TYPE T64-GE-1	DRIVE 12.08:1
BLADE 2FDMA3-6 2FEMA3-6	TIP + SHANK STRESSES ON UAC B-17 LEADING DATA 3 CROSSWIND GROUND TEST		APPROVED
DIAMETER 13' 6" Nom.			DRAWN BY SF
AIRPLANE UAC-B-17	HAMILTON STANDARD		DATE 4-5-66
STAND E. Hartford, Conn	DIVISION OF UNITED AIRCRAFT CORPORATION WINDSOR LOCKS, CONNECTICUT, U. S. A.		CURVE NO. 46305

FAW 855 93414-42
Wind 5 MPH

TAXI TEST

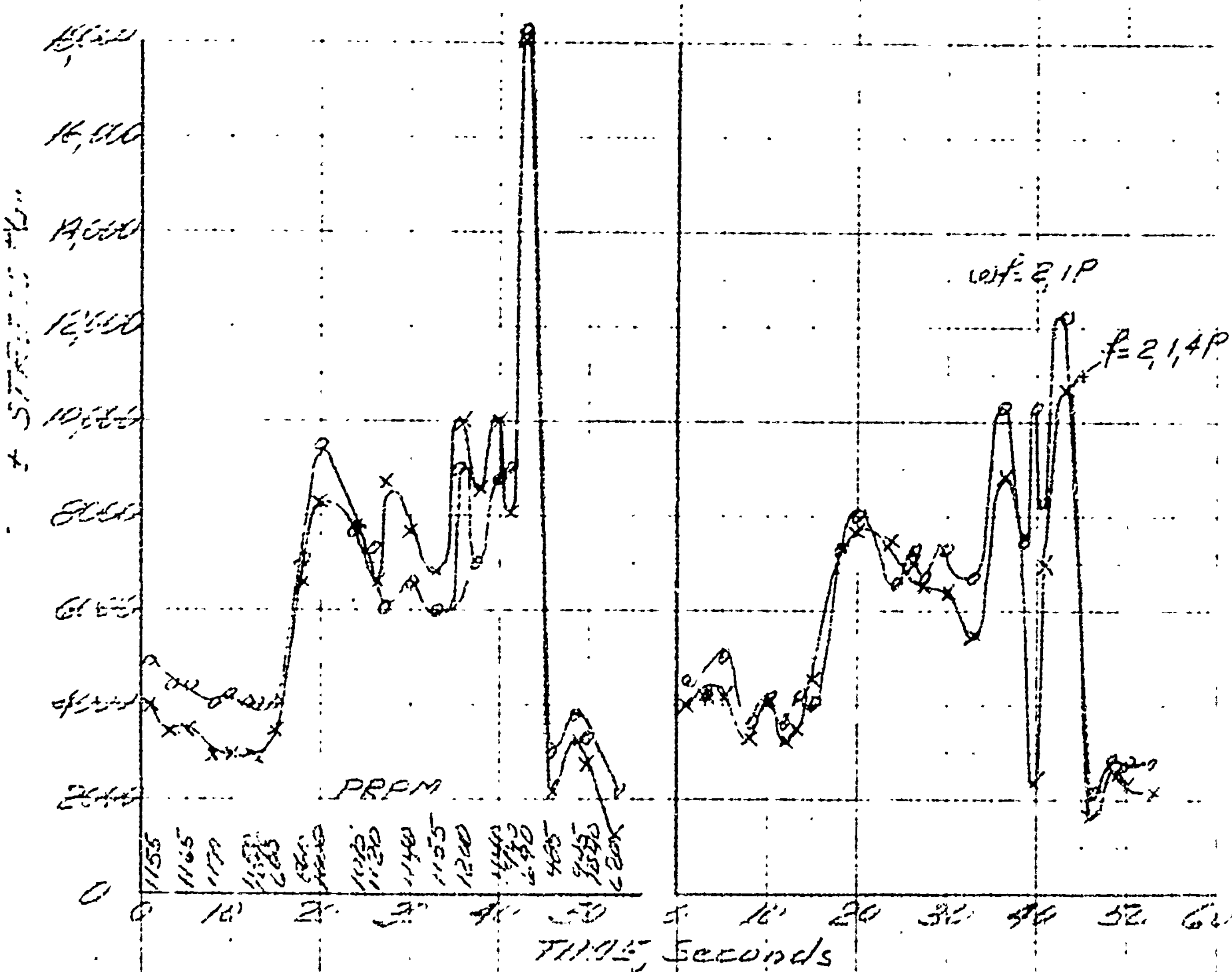
REV. TRANS AT 60 MPH IAS

T.O. - REV. - T.O.

FRONT PROP — REAR PROP

(x) 33" FT
(o) 45" FT

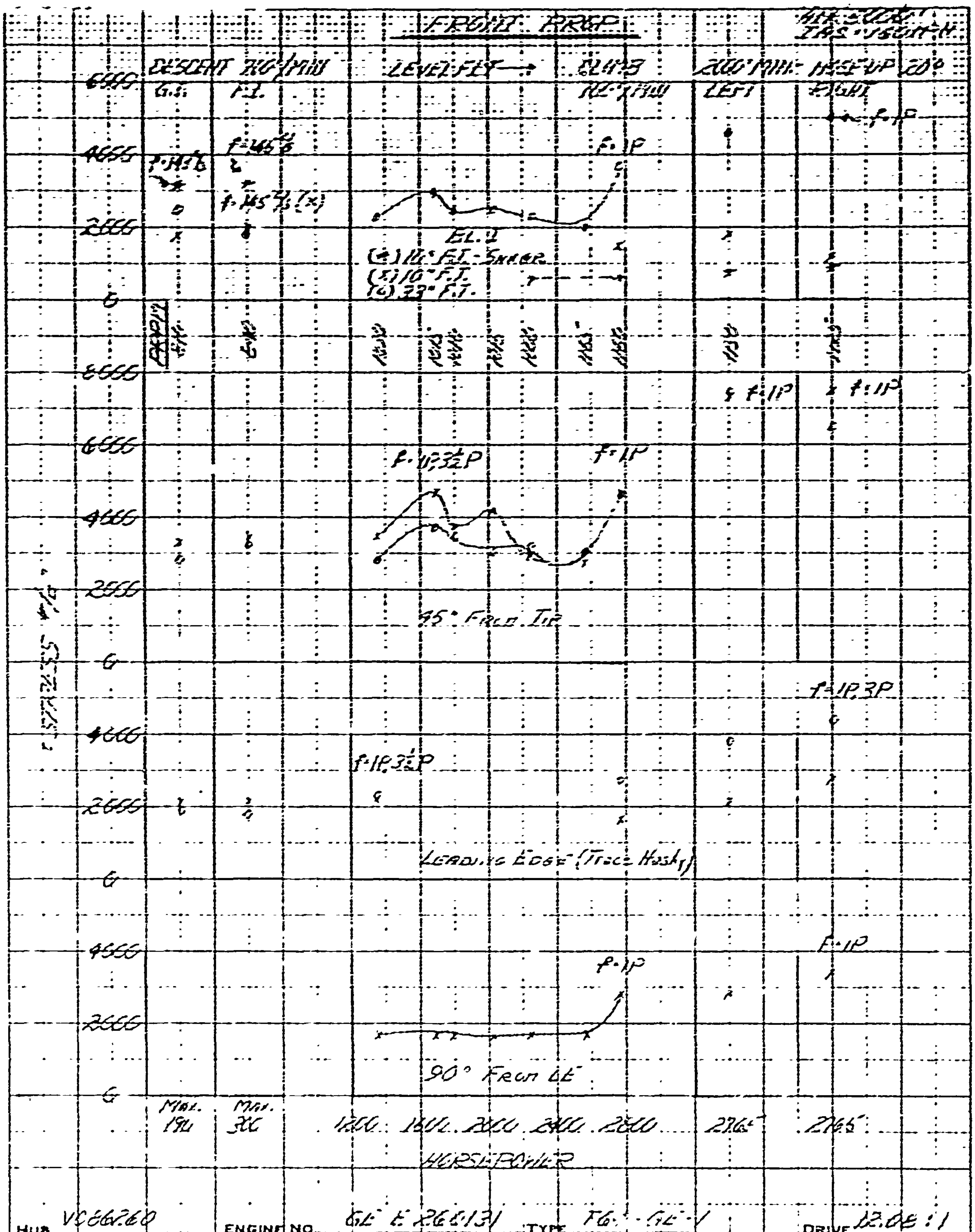
(o/x) f = 2,1P



HUB	VC 8K 200
BLADE	2FC14A5-6 / 2FC14B9-6
DIAMETER	13'6" Nom.
AIRPLANE	UAC B-17
STAND	E. Hartford Conn
ENGINE No.	GE-E 360131
TYPE	T64 GE-1
DRIVE	12.05:1
APPROVED	
DRAWN BY	GF
DATE	4-5-66
CURVE No.	4630?

BLADE STRESSES ON LINE B-17 DURING 90° RB CROSSWIND GROUND TEST

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U.S.A.



HUB VC66260 ENGINE NO. GE E 266131 TYPE F6 · GE · 1 DRIVE 12:08:1

BLADE 2FD14A3-6 / 2FE14A3-6

APPROVED

TIP, BLADE & SHANK STRESS ON VAC B-17

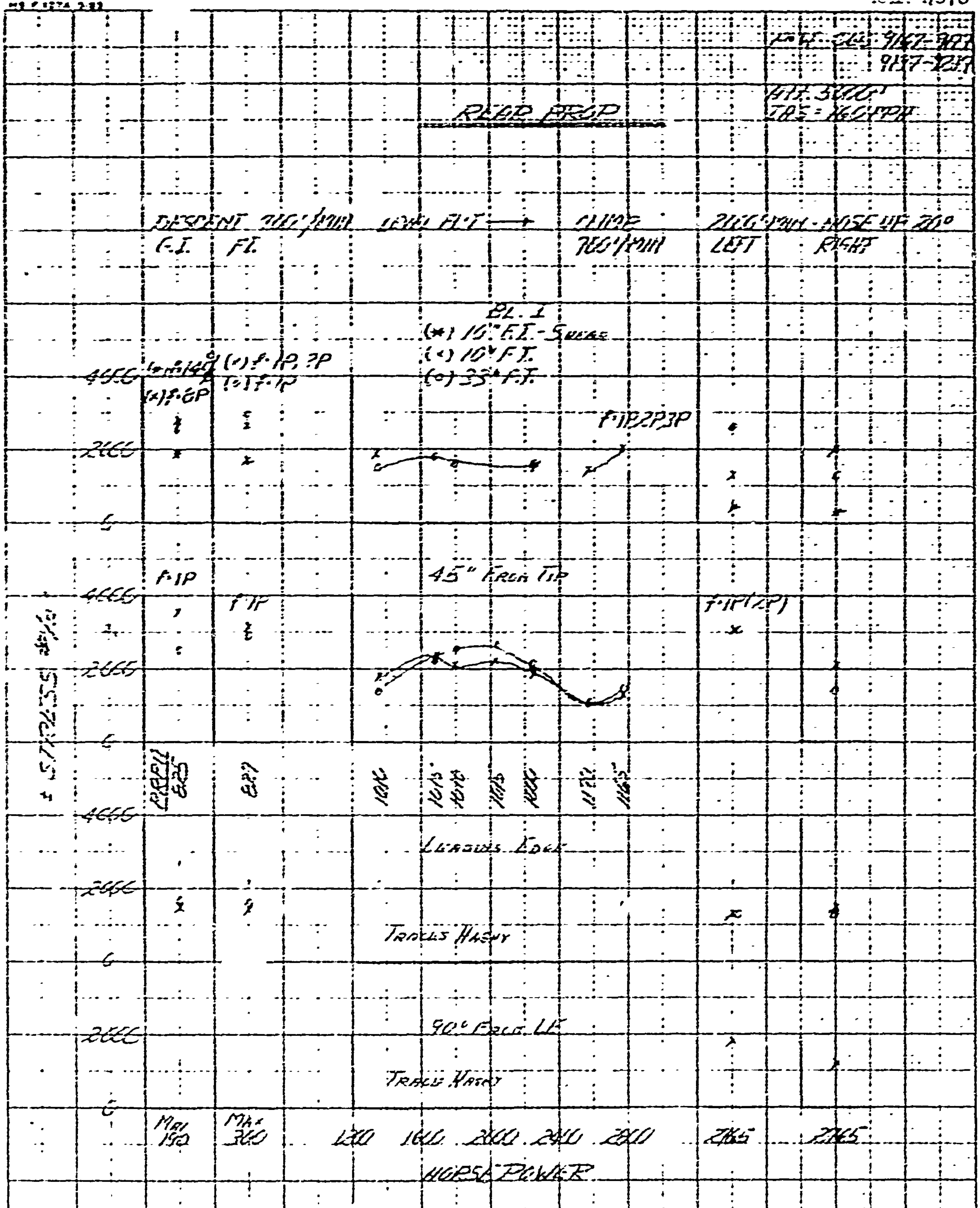
DURING FLIGHT TEST

DIAMETER 13'6" DRAWN BY F.T.

AIRPLANE CAC B-17 DATE 3-29-66

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

STAND E Hartford CURVE NO. 46S



HUB VC86260

ENGINE NO. 6E-E 266131 TYPE T64-GE-1

DRIVE 12:GE:1

BLADE 2FD14A3-6 / 2FE14A3-6

APPROVED

TIP BLADE & SHANK STRESS ON U.A.C. B-17
DURING FLIGHT TEST

DIAMETER 13'6"

DRAWN BY F.T.

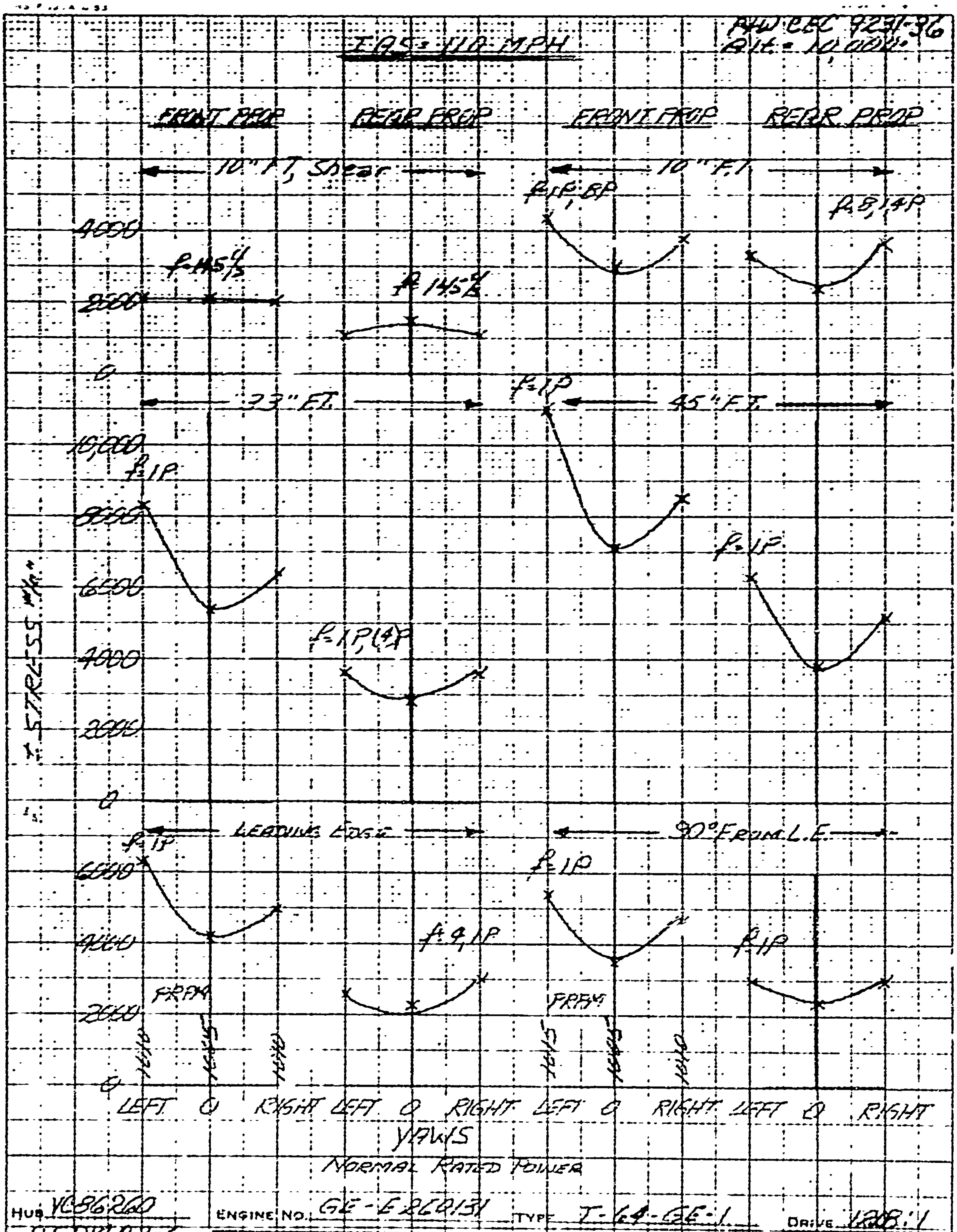
AIRPLANE U.A.C. B-17

DATE 7-29-66

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U.S.A.

STAND E. HARTFORD, CONN.

CURVE NO. 463[illegible]



Hub YC86260 | Engine No. GE-E260131 | Type T-64-GE-1 | Drive 1208:1

Blade 2FDPA A3-6 / 2FG14A3-6

Diameter 13'6" Nom.

Airplane UAC B-17

Stand E. Hartford, Conn.

TIP, BLADE AND SHANK STRESSES ON UAC-B17 DURING YAWS AT 110 MPH IAS

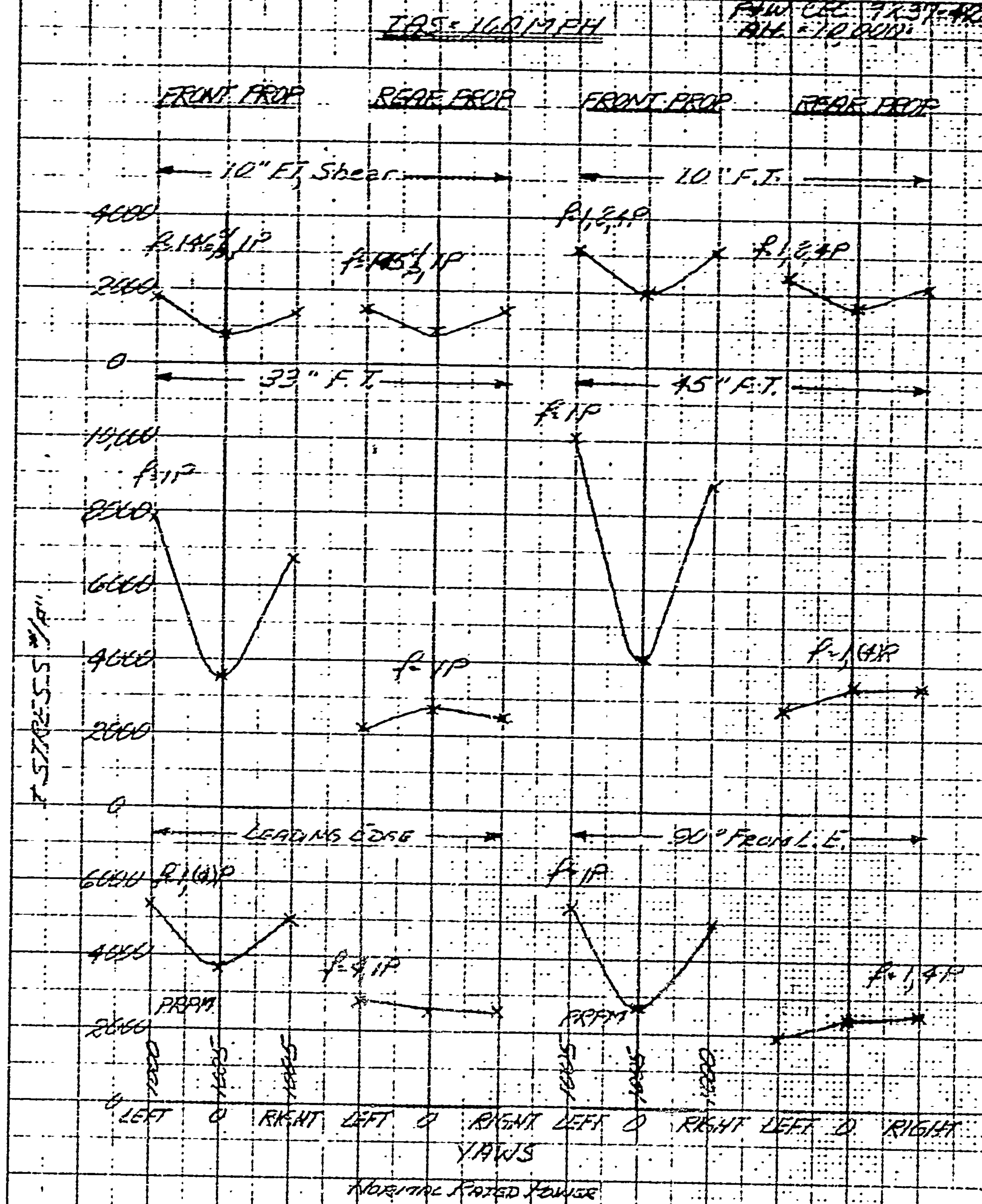
Approved ______

Drawn by GF

Date 3-30-66

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U.S.A.

Curve No. 46318



HUB V086280
ENGINE NO. GE-E 222131
TYPE
DRIVE

BLADE 2FD14A3-6 / 2FE14A3-6

DIAMETER 13'6" Nom

AIRPLANE UAC B-17

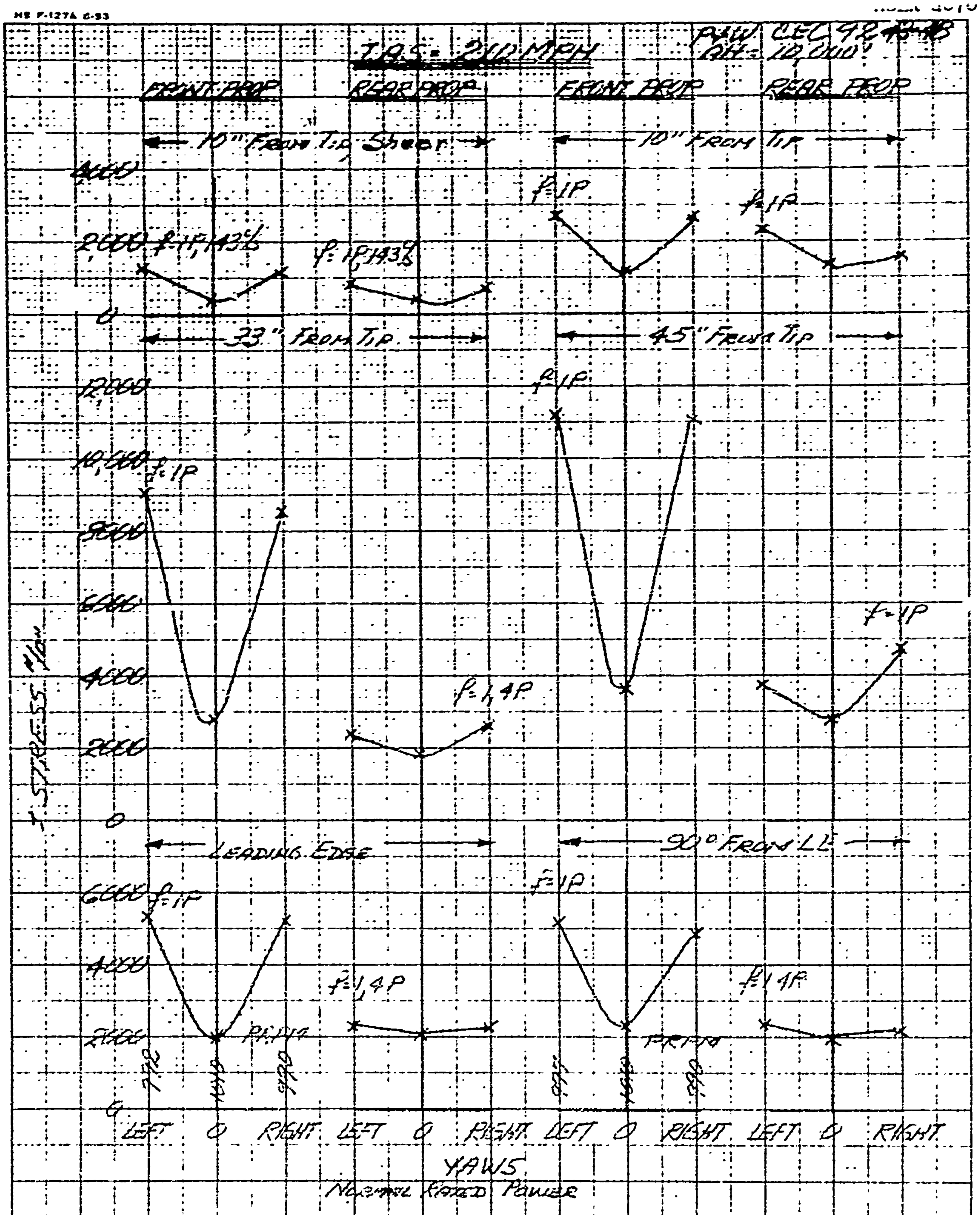
STAND E. Hartford Conn.

TIP, BLADE AND SHANK STRESSES ON UAC B-17 DURING YAWS AT 160 MPH IAS.

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U. S. A.

APPROVED
DRAWN BY GF
DATE
CURVE NO. 46309

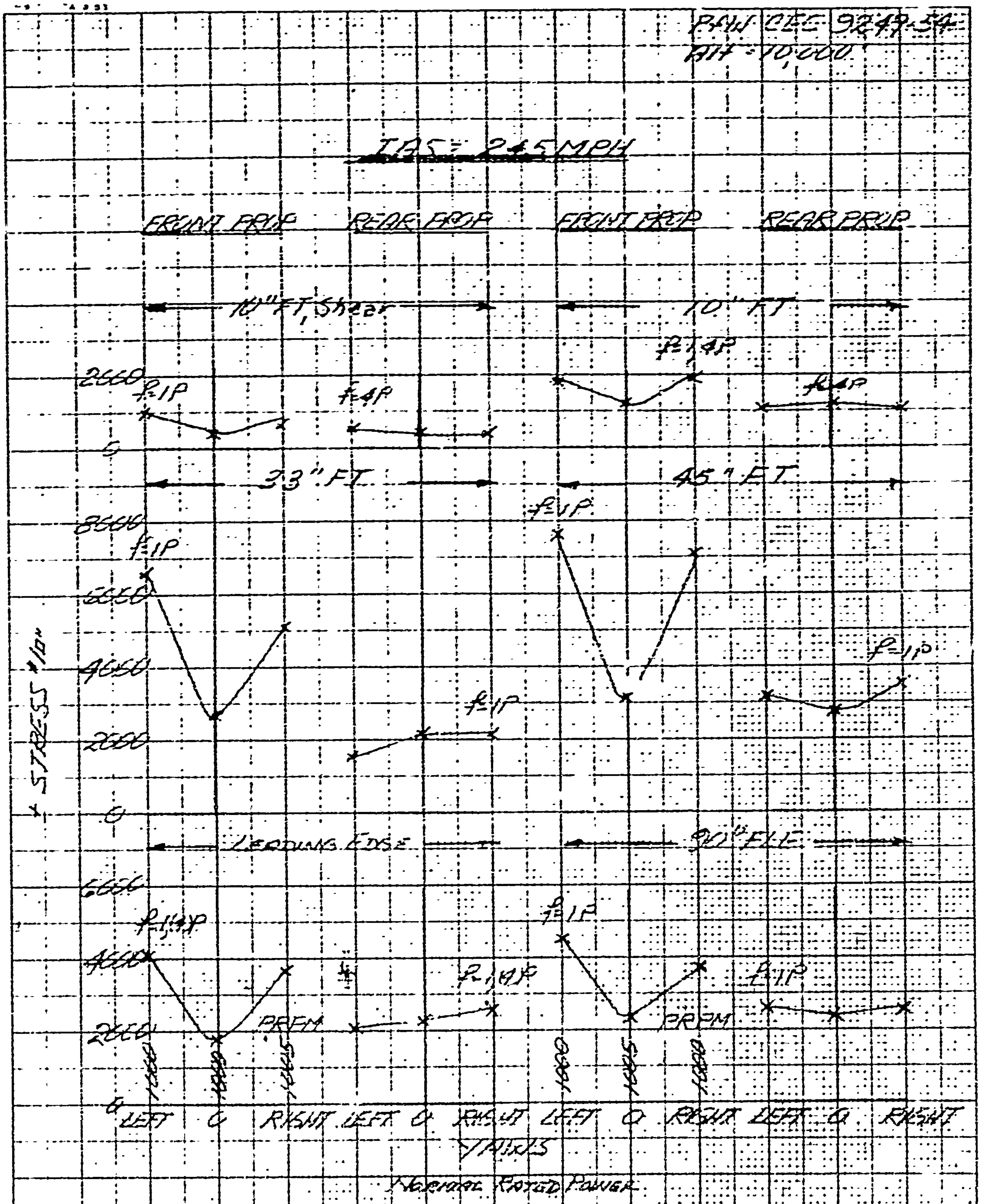
HS F-127A 6-53



HUB VC86260	ENGINE NO GE-E260131	TYPE T-64-GE-1	DRIVE 12.8:1
BLADE 2FGAA3-G 2FGAA3-G			APPROVED
DIAMETER 13'6" Nom.			DRAWN BY GF
AIRPLANE U.A.C. B-17			DATE 3-30-66
STAND E. Hartford Conn.			CURVE NO. 4631

TIP, BLADE AND SHANK STRESSES ON UAC B-17 DURING YAWS AT 210 MPH IAS

HAMILTON STANDARD
DIVISION OF UNITED AIRCRAFT CORPORATION
WINDSOR LOCKS, CONNECTICUT, U.S.A.



HUB VCGC260	ENGINE NO. GE-E 260131	TYPE T-64 GE-1	DRIVE 1.209:1
BLADE 2FC14A3-6 2FE14A2-6	TIP, BLADE AND SHANK STRESSES ON UAC B-17 DURING YAWS AT 245 MPH IAS		APPROVED
DIAMETER 13'6" Nom			DRAWN BY GF
AIRPLANE UAC B-17	HAMILTON STANDARD		DATE 3-30-61
STAND E. HARTFORD, CONN	DIVISION OF UNITED AIRCRAFT CORPORATION WINDSOR LOCKS, CONNECTICUT, U. S. A.		CURVE NO. [illegible]

APPENDIX B

PLAN OF TEST

JOB: 50 Hour PFRT of SK56029 Gearbox

PLAN PREPARED BY: D. K. Leishman

PROJECT & ORDER: 102-A05-100A

APPROVED BY:

INSTRUCTION:

TEST ENGINEER: D. K. Leishman

TIME PERIOD: 8-30-65 TO 10-30-65

1. WHAT IS ITEM BEING TESTED?
2. WHY IS TEST BEING RUN? WHAT WILL RESULTS SHOW OR BE USED FOR?
3. DESCRIBE TEST SET UP INCLUDING INSTRUMENTATION. ATTACH SKETCH OF INSTALLATION.
4. ITEMIZE RUNS TO BE MADE GIVING LENGTH OF EACH AND READINGS TO BE TAKEN.
5. SPECIAL INSTRUCTIONS. SAFETY PRECAUTIONS FOR OPERATORS AND HANDLING EQUIPMENT. OBSERVATIONS BY SIGHT, FEEL, OR HEARING. LIST POINTS OF OBSERVATION WHICH MIGHT CONTRIBUTE TO ANALYSIS OF (A) PERFORMANCE OF UNITS, (B) INCIPIENT TROUBLE BEFORE IT OCCURS, AND (C) CAUSE OF FAILURE.
6. HOW WILL DATA BE USED OR FINALLY PRESENTED? GIVE SAMPLE PLOT, CURVE, OR TABULATION AS IT WILL BE FINALLY PRESENTED.

NUMBER ENTRY AS LISTED ABOVE AND DESCRIBE BELOW

1. Test Item

1.1 The item being tested is the SK56029 speed reduction gearbox as defined by Model Specification 5067 (Ref. MIL-P-26366A Par. 4.5.2.4).

1.2 The same test gearbox shall be used for the entire 50 hour test (Ref. MIL-P-26366A Par. 4.5.2.1.2).

2.0 Object of Test

2.1 The object of the test is to fulfill the PFRT 50-hour engine test requirements of contract NOw 64-0635-di in accordance with Par. 4.5.2 of MIL-P-26366A and to demonstrate satisfactory gearbox operation and durability.

3.0 Test Installation and Instrumentation

3.1 The gearbox shall be mounted on a T64-GE-6 engine in "E" propeller test house at Hamilton Standard. A VC86260-5 propeller will be mounted on the gearbox. (Ref. MIL-P-26366A Par. 4.5.2.1.1.1).

3.2 The instrumentation shall be as necessary to monitor the parameters defined in Table I .

3.2.1 During the flight cycle portion of the test, the Sanborn Recorders shall be operated at a paper speed of 1MM/second and during the steady state and transient checks the paper speed shall be 2.5 MM/second and 10 MM/second respectively. (Ref. MIL-P-26366A Par. 4.5.2.7.1 and 4.5.2.7.2.

3.3 Prior to the test, the gearbox oil system shall be drained and filled with new MIL-L-7808 oil. The amount required to completely fill the system shall be recorded.

3.3.1 The oil inlet temperature to the gearbox shall be 215 $\pm$ 10°F.

3.3.2 The back pressure on the scavenge pump shall be 30 $\pm$ 1 psig at maximum propeller speed (1160).

3.3.3 Since the gearbox and engine use a common oil supply, some additional oil will be required during the test to make up oil consumed by the engine. The addition of this oil shall not be considered a "deviation from normal operation" as defined by 4.5.2.10 of MIL-P-26366A.

3.3.4 The propeller shall be serviced with MIL-H-6083B Type I hydraulic fluid. The engine shall be started, and the propeller operated in the governing range (1015-1160 rpm) for 15 minutes. During this period, the propeller shall be exercised with movements of both the power and condition levers. Fifteen reversals from 900 rpm shall be made. The engine shall then be shutdown, the oil level in the control checked, and if necessary, oil added.

If oil is added, repeat this procedure.

3.4 The engine propeller control linkages shall be checked prior to the initiation of actual testing. Power and condition levers shall be checked for correct rigging and to insure full range of travel. The established relationships between the control linkages shall be recorded. Only external means shall be used for any required adjustments. A normal checkout of the electrical system shall be made before testing. (Ref. MIL-P-26366A Par. 4.5.2.5).

4.0 Test Runs

4.1 Test scope. The test shall consist of steady state and transient performance checks, and fifty (50) one-hour flight cycles.

4.2 Response. Steady state and transient operation shall be checked in accordance with 4.2.1 and 4.2.2 prior to and following the cyclic portion of the test.

4.2.1 Steady state operation. After all external adjustments have been made to obtain the require operational performance, a calibration shall be conducted to obtain the steady-state data as specified in 3.2 for the following series of power lever settings. (Ref. Table II) (Ref. MIL-P-26366A Par 4.5.2.7.1)
(1) Reverse
(2) Ground Idle
(3) Flight Idle
(4) 60% Normal
(5) 80% Normal
(6) Normal
(7) Take-off

4.2.2 Transient operation, after completion of the steady state check, data will be recorded automatically as specified in 3.2 for the following series of transients. All lever movements shall be made in one second or less with time allowed for stabilization of propeller speed at each new condition. (Ref. Table II) (Ref. MIL-P-26366A Par. 4.5.2.7.2).

(1) Flight idle to 60% normal to flight idle
(2) Flight idle to 80% normal to flight idle
(3) Flight idle to normal to flight idle.
(4) Flight idle to take-off to flight idle
(5) Flight idle to take-off to ground idle
(6) Flight idle to take-off to reverse
(7) Flight idle to reverse
(8) Ground idle to flight idle
(9) Take-off to 60% normal to take-off
(10) Take-off to 80% normal to take-off
(11) Take-off to ground idle to take-off
(12) Take-off to reverse to take-off
(13) Flight idle to 60% normal to flight idle
(14) Flight idle to 80% normal to flight idle
(15) Ground idle to flight idle to take-off to ground idle
(16) Ground idle to flight idle to take-off to reverse
(17) Flight idle to reverse to take-off

Note: In (15) and (16) a maximum of 5 seconds shall be used in going from ground idle through flight idle to take-off holding take-off power for 3 second before moving to the next power setting.

4.2.3 Miscellaneous checks. After completion of the transient operation following the cyclic portion of the test, the following miscellaneous checks shall be made. (Ref. MIL-P-26366A Par. 4.5.2.7.3)

(1) Feather shutdown from flight idle power accomplished with the condition lever.
(2) Feather shutdown from normal power accomplished with the feather button. Fuel shall be shut off simultaneously.
(3) Static feathering and unfeathering after shutdown.
(4) With the propeller in the static dondition, reduce the voltage to the propeller to 17 volts. Then feather, unfeather, reverse, and unreverse the propeller.
(5) Increase the voltage to the propeller to 29 volts, then feather, unfeather, reverse, and unreverse the propeller.
(6) With the propeller operating at 60% normal power set the condition lever for 1160 rpm. Record propeller rpm and blade angle. Using the power lever, reverse the propeller. Repeat the foregoing procedure three times. (Check LPS operation.)

4.3 Cyclic test. Following the response tests, the gearbox shall be subjected to 50 successive one-hour flight cycles as defined by curve P29722 and Table II .. (Ref. MIL-P-26366A Par 4.5.2.8)

4.3.1 After the first, third, and sixth hour of operation and after every tenth hour thereafter, the gearbox shall be subjected to an external visual examination for signs of part distress or other irregular functioning. (Ref. MIL-P-26366A Par 4.5.2.8)

4.3.2 The log shall be maintained on a half hour basis throughout this test. In addition the required data shall be recorded at each operating condition during the first and fifth flight cycles and each fifth flight cycle of operation thereafter.

4.3.3 Should any of the following deviations from normal operation occur, the cognizant engineer shall be notified and the Government representative shall determine whether accrued creditable hours shall be disallowed.
(1) Failure of any component adversely affecting gearbox performance or integrity
(2) Detection of any failure or excessive wear of any component during teardown inspection.

5.0 Special Instructions

5.1 Pre-test inspection. Prior to initiation of testing the disassembled gearbox shall be made available for both Government and HSD engineering inspection. At this time a record shall be made of any wear or part deviation. The gearbox shall be assembled per HS 1455.

5.2 Post-test inspection. At the completion of testing per 4.2, 4.3, and 4.4 the gearbox again will be completely disassembled for inspection. Parts will be examined for wear and compared with pre-test examination records. Photographs will be made of any unusual wear. (Ref. MIL-P-26366A Par. 4.5.2.9).

5.3 The following limits will be observed during the test.

(1)	Turbine inlet temperatures	1160°F
(2)	Input torque	1200 ft. lbs.
(3)	Propeller speed	1160 rpm

6.0 Data Presentation

6.1 The final data from this test will be included in the final report covering the VC86260 flight test program.

TABLE I

Measurement	Limit
Gearbox	
Lube oil inlet temperature	225°F max.
Lube oil outlet temperature	350°F max.
Lube oil pressure	30-80 psig
Lube oil flow	20-60 qpm
Lube oil inlet pressure	5 psia min.
Scavenge discharge pressure	30 psig max.
Vibration (6)	100 mils max. below 100 cps 20 mils max. below 70 cps 4 mils max. above 70 cps
Vent pressure	0-1 in of Hg
Brake actuation pressure	1600 psig max.
Engine	
Power turbine speed	17,000 rpm max.
*Gas generator speed	18,500 rpm max.
Torque	1200 ft-lbs. max.
Vibration (4)	4 mils max. steady state 8 mils max. peaking
Lube oil inlet pressure	5 psia min.
Scavenge discharge pressure	30 psig max.
Lube oil pressure	15 psig min.
Lube oil inlet temperature	225°F max.
Lube oil outlet temperature	310°F max.
Fuel flow	

Table I (Continued)

Measurement	Limit
Fuel inlet pressure	50 psig max.
Fuel manifold pressure	
Turbine vent pressure	
Diffuser vent pressure	
Compressor inlet pressure	
Compressor discharge pressure	
Turbine inlet temperature	1160°F max.
Compressor inlet temperature	
Propeller	
*Front blade angle	-21° to +83°
*Speed	1200 rpm max.
*Condition lever	0-160°
*Power lever	0-170°
*High pitch pressure	1300 psig max.
*Low pitch pressure	800 psig max.
*Pitchlock pressure	300 psig max.
Control temperature	250°F max.

Parameters noted by* are to be recorded on Sanborn recorders.

TABLE II

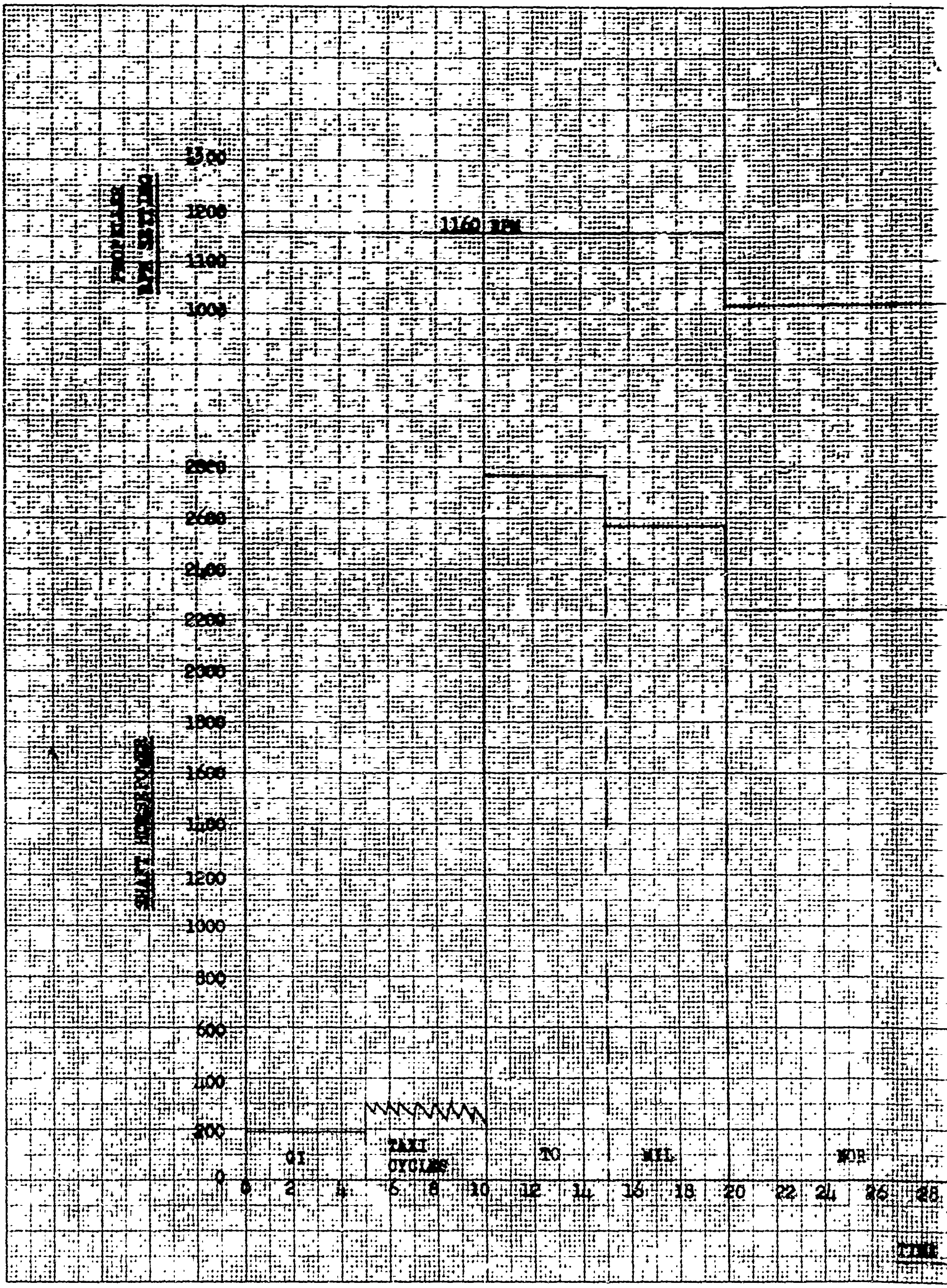
Test Conditions

Condition	Power (HP)	Propeller Speed Setting (rpm)	Input Torque (ft-lb)
Take-off	2765	1160	1036
Military	2570	1160	963
Normal	2245	1015	961
90% Normal	2020	1015	865
80% Normal	1796	1015	769
75% Normal	1684	1015	721
60% Normal	1347	1015	577
Flight Idle	300 (max)	---	---
Ground Idle	190 (max)	---	---
Reverse	2530	1160	---

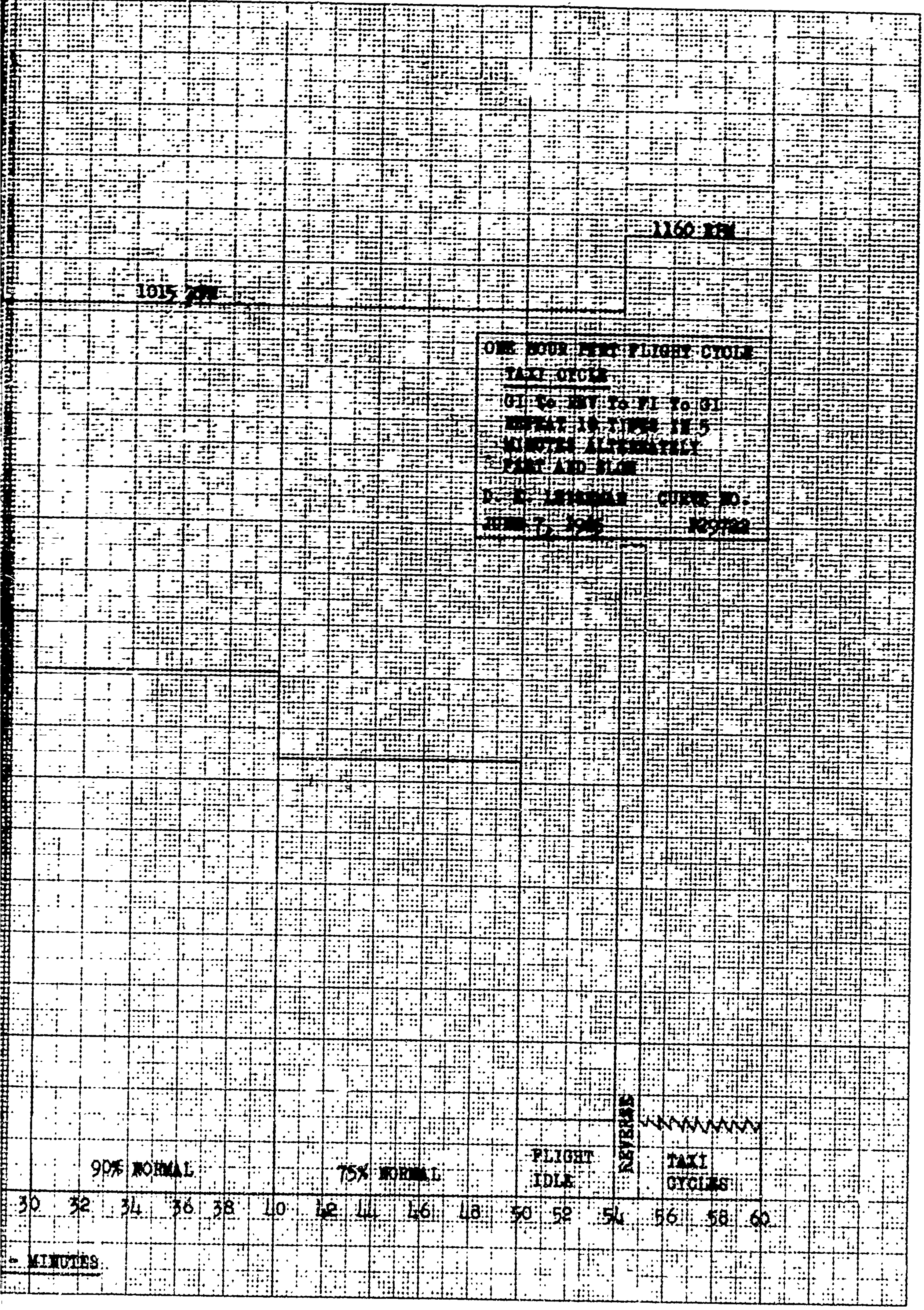
TABLE III

PARTS LIST DEVIATION

Parts List	Quantity	Part Replaced	Substitute Part	Reason
SK 56029	1	583726 Pinion	128X421	Identical except for instrumentation rework


PROPELLER RPM SETTING
1300
1200
1100
1000
1160 RPM
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
SHAFT HORSEPOWER
GI
TAXI CYCLES
TO
MIL
NOR
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
TIME

A



1160 RPM
1015 RPM
REVERSE
FLIGHT IDLE
TAXI CYCLES
90% NORMAL
75% NORMAL
30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60
- MINUTES

C

HS F-927 6/56

TEST NO. 128PT-90

HAMILTON STANDARD

PLAN OF TEST

JOB: 50-Hour Flight Test of 73EGB1 Propeller

PLAN PREPARED BY: D.K.Leishman

PROJECT & ORDER: 104-A00-100A

APPROVED BY

INSTRUCTION:

TEST ENGINEER: D.K.Leishman

TIME PERIOD: November 1965 TO January 1966

1. WHAT IS ITEM BEING TESTED?
2. WHY IS TEST BEING RUN? WHAT WILL RESULTS SHOW OR BE USED FOR?
3. DESCRIBE TEST SET UP INCLUDING INSTRUMENTATION. ATTACH SKETCH OF INSTALLATION.
4. ITEMIZE RUNS TO BE MADE GIVING LENGTH OF EACH AND READINGS TO BE TAKEN.
5. SPECIAL INSTRUCTIONS: SAFETY PRECAUTIONS FOR OPERATORS AND HANDLING EQUIPMENT. OBSERVATIONS BY SIGHT. FEEL. OR HEARING. LIST POINTS OF OBSERVATION WHICH MIGHT CONTRIBUTE TO ANALYSIS OF (A) PERFORMANCE OF UNITS. (B) INCIPIENT TROUBLE BEFORE IT OCCURS. AND (C) CAUSE OF FAILURE.
6. HOW WILL DATA BE USED OR FINALLY PRESENTED? GIVE SAMPLE PLOT. CURVE. OR TABULATION AS IT WILL BE FINALLY PRESENTED.

NUMBER ENTRY AS LISTED ABOVE AND DESCRIBE BELOW

1.0 TEST ITEM

1.1 The item being tested is the 73EGB1 Integral Gearbox Propeller as defined by P/L SK53517.

2.0 OBJECT OF TEST

2.1 The object of this test is to evaluate the airworthiness of the propeller.

3.0 TEST INSTALLATION AND INSTRUMENTATION

3.1 The propeller shall be mounted in the nose nacelle (Ref. L-8852) of the UAC B-17 aircraft. A T64-GE-1 engine shall be used as the power source.

3.2 The instrumentation shall be as necessary to monitor the parameters defined in Table I.

3.2.1 The instrumentation and techniques used for the vibration stress survey shall be as specified in Plan of Test 128PT-91.

3.2.2 During the flight cycle portion of the test, the oscillograph shall be operated at a speed of .46 in/sec and during the steady state and transient checks the speed shall be 4.8 in/sec.

4.0 TEST RUNS

4.1 Test scope. The test shall consist of a vibration stress survey, a nacelle temperature survey, propeller steady state and transient performance checks, propeller attitude operation checks, and flight cycles.

4.2 Vibration stress survey.

4.2.1 Reference - Plan of Test 128PT-91.

4.3 Nacelle temperature survey. (Repeat on ground and at 5000', IAS 200 mph.) The temperatures at the points noted in Table II shall be measured at the following power settings. The setting shall be maintained until the temperatures stabilize. (Ref. Table III)

1. Flight Idle
2. Take-off

4.4 Control Response. (Repeat on ground and at 5000', 10,000', 20,000', and 30,000' with IAS of 150 mph and max attainable.) Steady state and transient operation shall be checked in accordance with 4.4.1, 4.4.2, 4.4.3, and 4.4.4. as limited by engine power.

4.4.1 Steady state operation. A calibration shall be made to obtain steady state data as specified in 3.2 for the following series of power settings. (Ref. Table III)

1. Ground Idle
2. Flight Idle
3. 60% Normal
4. 80% Normal
5. Normal
6. Take-off

4.4.2 Condition lever transients. After completion of the steady state check, data will be recorded as specified in 3.2 for the following series of transients. (Ref. Table III) All condition lever movements shall be made in one second or less, with a pause to allow conditions to stabilize between burst and chop.

1. Set power at 60% normal

   a. 1000 rpm to 1250 rpm to 1000 rpm
   b. 900 rpm to 1250 rpm to 900 rpm
   c. 800 rpm to 1250 rpm to 800 rpm
   d. 700 rpm to 1250 rpm to 700 rpm

2. Set power at 80% normal

   a. 1000 rpm to 1250 rpm to 1000 rpm
   b. 900 rpm to 1250 rpm to 900 rpm
   c. 800 rpm to 1250 rpm to 800 rpm

3. Set power at normal

   a. 1000 rpm to 1250 rpm to 1000 rpm
   b. 900 rpm to 1250 rpm to 900 rpm

4. Set power at take-off

   a. 1100 rpm to 1250 rpm to 1100 rpm
   b. 1050 rpm to 1250 rpm to 1050 rpm

4.4.3 Power lever transients. After completion of the condition lever transients data will be recorded as specified in 3.2 for the following series of transients. (Ref. Table III). All lever movements shall be made in one second or less, with a pause to allow conditions to stabilize between burst and chop.

1. Set condition lever at 1130 rpm

   a. 80% normal to normal to 80% normal
   b. 60% normal to normal to 60% normal
   c. Flight idle to normal to flight idle
   d. Normal to take-off to normal
   e. 80% normal to take-off to 80% normal
   f. 60% normal to take-off to 60% normal
   g. Flight idle to take-off to flight idle

2. Set condition lever at 1250 rpm and repeat the power lever movements of 1.

4.4.4 Transient operation. After completion of the power lever transients, data will be recorded as specified in 3.2 for the following series of transients. (Ref. Table III)

1. Flight idle to 60% normal to flight idle
2. Flight idle to 80% normal to flight idle
3. Flight idle to normal to flight idle
4. Flight idle to take-off to flight idle
5. Take-off to 80% normal to take-off
6. Take-off to 60% normal to take-off
7. Take-off to ground idle to take-off

4.5 Feathering and unfeathering checks. Check electrical and mechanical feathering and unfeathering operation at ground idle power of the test engine, at altitudes of 5000', 10,000', 20,000', and 30,000' with IAS of 150 and max attainable.

4.6 Taxi Tests

4.6.1 Make reverse transients at forward velocities of 20, 40, and 60 mph IAS from the following test engine powers.

1. Flight idle
2. Normal
3. Take-off

4.7 Attitude checks.

4.7.1 With the test propeller operating at 90% of normal power, altitude of 20,000' and max attainable airspeed, check gearbox operation with the aircraft in level flight inclined 20° to each side for a period of five minutes.

4.7.2 With the test propeller operating at 90% normal power, altitude of 20,000' and max attainable airspeed, check gearbox operation with the aircraft in level flight inclined up to 45° to each side for a period of 30 seconds.

4.7.3 With the test propeller operating at 60% normal power, altitude of 20,000', check gearbox operation with the aircraft in as steep a nose-down attitude (45° max) as possible inclined 10° to each side for as long as possible.

4.7.4 With the test propeller operating at take-off power, altitude of 5000', check gearbox operation with the aircraft in the steepest possible nose-up attitude inclined 10° to each side for as long as possible.

4.7.5 With the test propeller operating at normal power, altitude of 20,000', check gearbox operation with the aircraft being flown in a manner to exert a force of negative one "g" for a period of up to sixty seconds.

4.7.6 With the test propeller operating at normal power, altitude of 20,000', check gearbox operation with the aircraft being flown in a manner to exert a zero "g" condition for a period of up to thirty seconds.

4.8 Flight cycles. The time necessary to accumulate a total of 50 hours of test will be made up of one-hour flight cycles as defined by Table III and Curve 1. Each cycle will be started at an altitude of 1000'. Half of the cycles will be run with an oil inlet temperature to the test engine and gearbox of 200-225°F, and the remainder with an inlet temperature as cold as possible.

5.0 SPECIAL INSTRUCTIONS

5.1 The oil used for the propeller, gearbox, and engine shall be MIL-L-7808.

5.2 The maximum input torque to the gearbox shall be 1135 ft-lbs.

5.3 The maximum steady state propeller speed shall be 1250 rpm.

5.4 The maximum allowable turbine inlet temperature shall be 1180°F.

5.5 Brake actuation pressure shall be 1600 psig maximum.

5.6 If safety of flight considerations indicate that #2 and #3 propellers should not be feathered in flight, avoid continuous operation of #2 and #3 engines between 1200 and 1600 rpm and between 2300 and 2600 rpm if #5 propeller is operating above flight idle power.

5.7 Avoid ground running on #5 propeller between 900 and 1050 rpm at gear box input torques above 960 ft-lbs.

TABLE I

Parameter	Range	Visual	Automatic Recording
Aircraft attitude		x	
Blade Angle	-21° to $+73^{\circ}$	x	x
Control temperature	0 to 300°F	x	
High pitch pressure	0 to 1500 psi	x	x
Low pitch pressure	0 to 1300 psi	x	x
Pitchlock pressure	0 to 1500 psi	x	x
Gearbox vent pressure	0 to 5 psi	x	
Gearbox lube pump inlet pressure	-25" to +25 psi	x	
Gearbox scavenge pressure	0 to 30 psi	x	
Gearbox lube pressure	0 to 150 psi	x	
Gearbox lube flow	0 to 75 gpm	x	
Gearbox lube in temperature	0 to 225°F	x	
Gearbox lube out temperature	0 to 275°F	x	
Gearbox vibration (6)	0 to 20 mils	x	
Brake pressure	0 to 1600 psi	x	
Power turbine rpm	0 to 17000 rpm	x	x
Gas generator rpm	0 to 19000 rpm	x	
Torque	0 to 1200 ft-lbs.	x	
Fuel Flow	0 to 1500 pph	x	x
Turbine inlet temperature	0 to 1160°F	x	
Engine oil temperature	0 to 250°F	x	
Engine oil pressure	0 to 100 psi	x	
Engine vibration (4)	0 to 5 mils	x	
Power lever	0 to 125°	x	x
Condition lever	0 to 110°	x	x
Outside Air temperature		x	
Aircraft weight		x	

TABLE II

Nacelle Temperature Survey

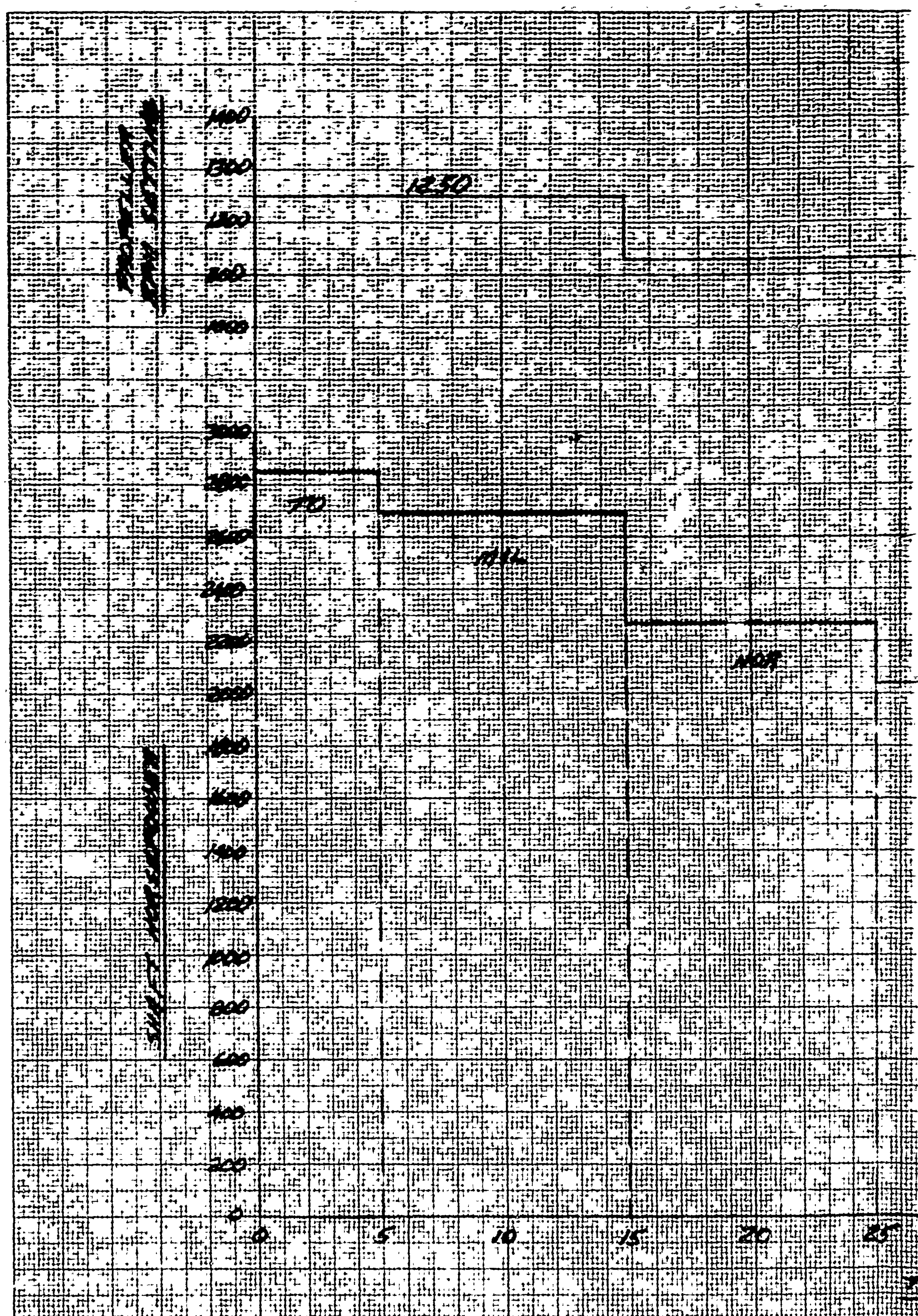
All temperatures are washer type T/C's.

Location	Range
Engine:	
Strut mount pad top	0-300°F
Accy. case bolt circle	0-300°F
Burner case top	0-1000°F
Turbine casing forward top	0-1000°F
Turbine casing aft top	0-1000°F
Lord mount	0-300°F
Nacelle:	
Firewall beam	0-300°F
Propeller-Gearbox:	
Control	0-300°F
Gearbox Rear	0-300°F
Lube oil in	0-300°F
Lube oil out	0-300°F

TABLE III

Test Conditions

Condition	Nominal Power (hp)	Propeller Speed Setting (rpm)	Input Torque (ft-lbs)
Take-off	2850	1250	991
Military	2690	1250	935
Normal	2270	1130	877
90% normal	2045	1130	790
80% normal	1816	1130	702
75% normal	1700	1130	656
60% normal	1360	1130	534
Flight idle	300 max.	---	---
Ground idle	190 max.	---	---



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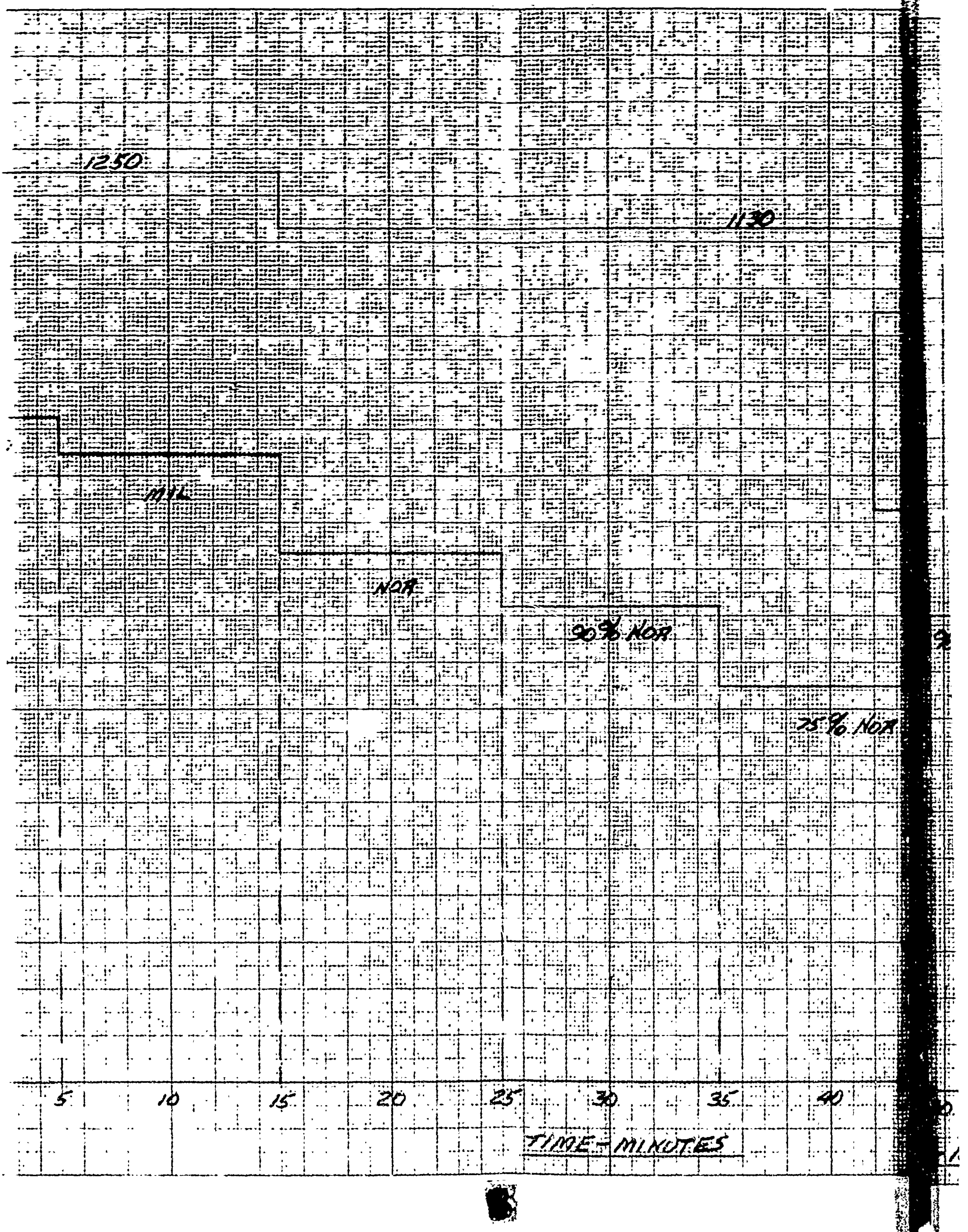
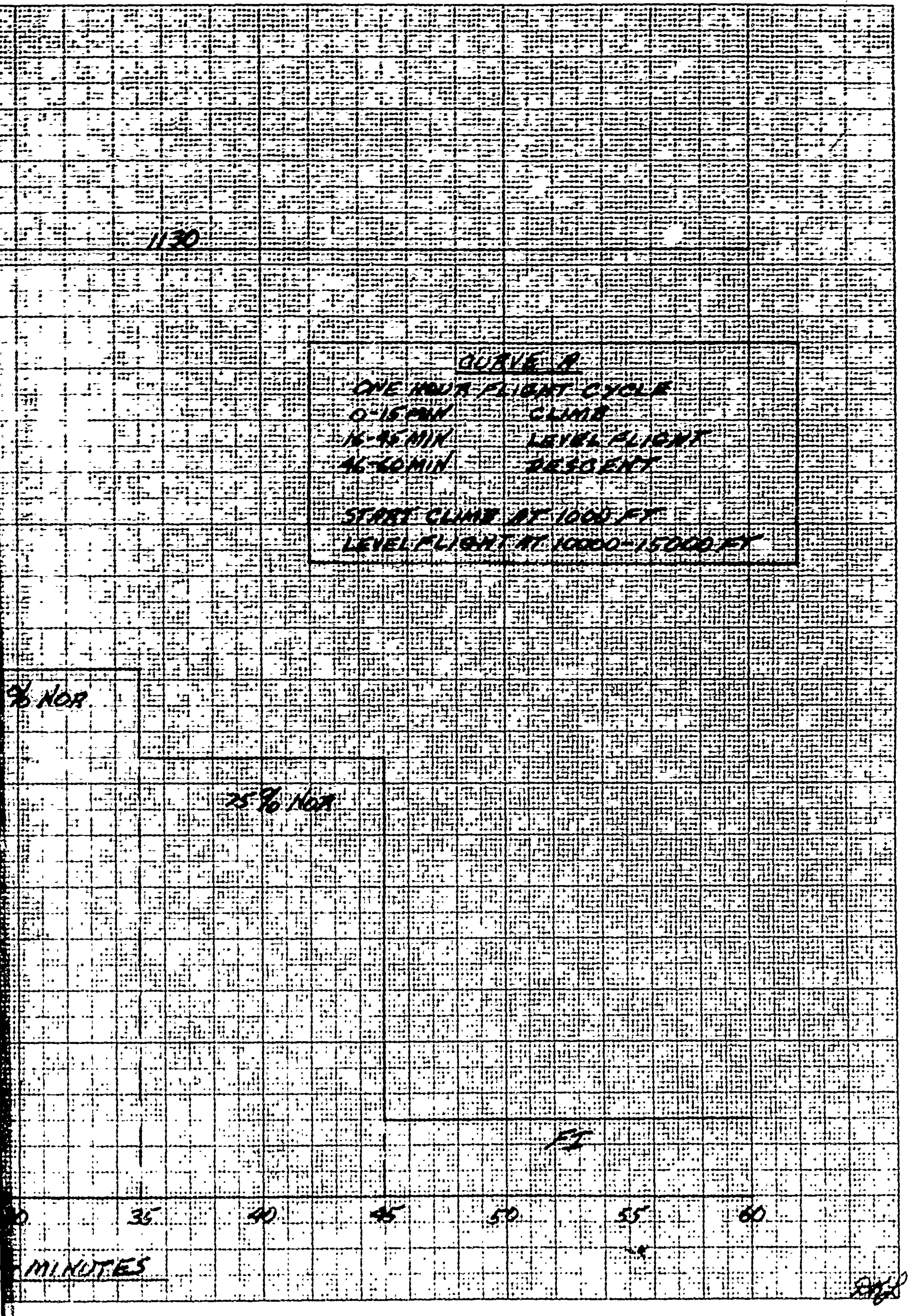

1250
1130
MIL
NOR
90% NOR
75% NOR
5
10
15
20
25
30
35
40
TIME - MINUTES



1130
CURVE A
ONE HOUR FLIGHT CYCLE
0-15 MIN CLIMB
16-45 MIN LEVEL FLIGHT
46-60 MIN DESCENT
START CLIMB AT 1000 FT
LEVEL FLIGHT AT 10000-15000 FT
% NOR
75 % NOR
FI
35
40
45
50
55
60
MINUTES

C

HS F-927 6/50

TEST NO. 128PT-91

HAMILTON STANDARD

PLAN OF TEST

JOB: Vibration Survey of 73ECB1 Propeller

PLAN PREPARED BY: S. Parsons

PROJECT & ORDER: 104-A00-100A

APPROVED BY: S. Parsons

INSTRUCTION:

TEST ENGINEER: D.K.Leishman

TIME PERIOD: November 1965 TO January 1966

1. WHAT IS ITEM BEING TESTED
2. WHY IS TEST BEING RUN? WHAT WILL RESULTS SHOW OR BE USED FOR?
3. DESCRIBE TEST SET UP INCLUDING INSTRUMENTATION. ATTACH SKETCH OF INSTALLATION.
4. ITEMIZE RUNS TO BE MADE GIVING LENGTH OF EACH AND READINGS TO BE TAKEN.
5. SPECIAL INSTRUCTIONS: SAFETY PRECAUTIONS FOR OPERATORS AND HANDLING EQUIPMENT. OBSERVATIONS BY SIGHT, FEEL, OR HEARING. LIST POINTS OF OBSERVATION WHICH MIGHT CONTRIBUTE TO ANALYSIS OF (A) PERFORMANCE OF UNITS, (B) INCIPIENT TROUBLE BEFORE IT OCCURS, AND (C) CAUSE OF FAILURE.
6. HOW WILL DATA BE USED OR FINALLY PRESENTED? GIVE SAMPLE PLOT, CURVE, OR TABULATION AS IT WILL BE FINALLY PRESENTED.

NUMBER ENTRY AS LISTED ABOVE AND DESCRIBE BELOW

1.0 TEST ITEM

1.1 Aircraft: UAC Experimental B-17

Engine: Fuselage nose mounted T-64-GE-1

Propeller: 73ECB1/6903-14/SK 50067

Gear Ratio: 12.08 to 1

3.0 TEST INSTALLATION AND INSTRUMENTATION

3.1 Strain Gage Hook-up:

Trace	Location	Blade No.
1	20" from tip	1
2	20" from tip, Vee	1
3	50" from tip	1
4	Shank, L.E.	1
5	Shank, 90° F.L.E.	1
6	Shank, 135° F.L.E.	1
7	50" from tip	2
8	Shank, L.E.	2
9	1P Phase pip	
10	Aircraft Vert. c.g. acc. (n_z)	
11	Timing code	
12		

4.0 OPERATING CONDITIONS

4.1 Steady State. (In accordance with Items 4.3, 4.4.1 and 4.7 of Plan of Test 128PT-90.)

Power Setting	G.I.	F.I.	60%	75%	80%	90%	100%	Mil	T.O.
Horsepower	190	300	1360	1700	1816	2045	2270	2690	2850
Prop RPM	---	---	1130	1130	1130	1130	1130	1250	1250
Engine torque, ft-lbs	---	---	526	656	702	790	877	935	991

Wind Velocities or Indicated Airspeeds, mph

Ground-Headwind	0-25	0-25	0-25		0-25		0-25		0-25
Ground-Crosswind	15-25	15-25	15-25		15-25		15-25		15-25
Flight-S.L. to 5000'	200, max	200, max	200, max	200	200, max	200	200, max	150	150, 200
Flight-10,000'	200, max	200, max	200, max	200	200, max	200	200, max	150	200, max
Flight-20,000'	200, max	200, max	200, max	200	200, 250, max	200	200, max	150	200, max
Flight-30,000'	200, max	200, max	200, max	200	200, max	200	200, max	150	200, max

4.2 Transients

4.2.1 During ground running in 0-25 mph headwind and 15-25 mph crosswind, and in flight at 20,000' at 200 mph IAS, record the following transients as given in Plan of Test 128PT-90:

Item 4.4.2, Transients 1d, 2c, 3b, 4b.
Item 4.4.3, Transients 1d, 1g, 2d, 2g.
Item 4.4.4, Transients 4, 7

4.2.2 At 150 mph IAS and 10,000', record an air start and feathering.

4.3 Attitude Checks

4.3.1 Record the following conditions as given in Plan of Test 128PT-90:

Item 4.7.1 (This can be a continuous 1.064 g turn).
Item 4.7.2 (This can be a continuous 1.41 g turn).
Item 4.7.3 Note pitch angle.
Item 4.7.4 Note pitch angle.
Item 4.7.5 Use 200 mph IAS.
Item 4.7.6 Use 200 mph IAS.

These last two items can be combined into a roller coaster run from 1g to 2g to -1g to 1g.

4.4 Taxi Tests

4.4.1 Record data for conditions as given in Plan of Test 128PT-90, Item 4.6.

HS F-921 0'56

PLAN OF TEST

JOB: 50-Hour Flight Test of VC86260 Propeller

PLAN PREPARED BY: D. K. Leishman

PROJECT & ORDER: 104-A00-100A

APPROVED BY:

INSTRUCTION:

TEST ENGINEER: D. K. Leishman

TIME PERIOD: February 1966 TO July 1966

1. WHAT IS ITEM BEING TESTED? 1
2. WHY IS TEST BEING RUN? WHAT WILL RESULTS SHOW OR BE USED FOR? 1
3. DESCRIBE TEST SET UP INCLUDING INSTRUMENTATION. ATTACH SKETCH OF INSTALLATION. 1
4. ITEMIZE RUNS TO BE MADE GIVING LENGTH OF EACH AND READINGS TO BE TAKEN.
5. SPECIAL INSTRUCTIONS. SAFETY PRECAUTIONS FOR OPERATORS AND HANDLING EQUIPMENT. OBSERVATIONS BY SIGHT, FEEL, OR HEARING. LIST POINTS OF OBSERVATION WHICH MIGHT CONTRIBUTE TO ANALYSIS OF (A) PERFORMANCE OF UNITS, (B) INCIPIENT TROUBLE BEFORE IT OCCURS, AND (C) CAUSE OF FAILURE. 4
6. HOW WILL DATA BE USED OR FINALLY PRESENTED? GIVE SAMPLE PLOT, CURVE, OR TABULATION AS IT WILL BE FINALLY PRESENTED. 4

NUMBER ENTRY AS LISTED ABOVE AND DESCRIBE BELOW

1.0 TEST ITEM

1.1 The item being tested is the VC86260-5 Variable Camber Propeller.

2.0 OBJECT OF TEST

2.1 The object of this test is to evaluate the airworthiness of the propeller.

3.0 TEST INSTALLATION AND INSTRUMENTATION

3.1 The propeller shall be mounted in the nose nacelle (Reference L-8852) of the UAC B-17 aircraft. A T64-GE-1 engine (with an SK56029 Speed Reduction Gearbox) shall be used as the power source.

3.2 The instrumentation shall be as necessary to monitor the parameters defined in Table I.

3.2.1 The instrumentation and techniques used for the vibration stress survey shall be as specified in Plan of Test 128PT-94.

3.2.2 During the flight cycle portion of the test, the oscillograph shall be operated at a speed of .46 in/sec, and during the steady state and transient checks the speed shall be 4.8 in/sec.

4.0 TEST RUNS

4.1 Test scope. The test shall consist of a vibration stress survey, a nacelle temperature survey, propeller steady state and transient performance checks, propeller attitude operation checks, propeller performance test, and flight cycles.

4.2 Vibration stress survey.

4.2.1 Reference - Plan of Test 128PT-94.

4.3 Nacelle temperature survey. (Repeat on ground and at 5000', IAS 200 mph.) The temperatures at the points noted in Table II shall be measured at the following power settings. The setting shall be maintained until the tempera-tures stabilize. (Reference Table III.)

1. Flight Idle
2. Take-off

4.4 Control Response. (Repeat on ground and at 5000', 10,000', 20,000', and 30,000' with IAS of 150 mph and max attainable.) Steady state and transient operation shall be checked in accordance with 4.4.1, 4.4.2, 4.4.3, and 4.4.4. as limited by engine power.

4.4.1 Steady state operation. A calibration shall be made to obtain steady state data as specified in 3.2 for the following series of power settings. (Reference Table III.)

1. Ground Idle
2. Flight Idle
3. 60% Normal
4. 80% Normal
5. Normal
6. Take-off

4.4.2 Condition lever transients. After completion of the steady state check, data will be recorded as specified in 3.2 for the following series of transients. (Reference Table III.) All condition lever movements shall be made in one second or less, with a pause to allow conditions to stabilize between burst and chop.

1. Set power at 60% normal

   a. 1000 rpm to 1160 rpm to 1000 rpm
   b. 900 rpm to 1160 rpm to 900 rpm
   c. 850 rpm to 1160 rpm to 850 rpm

2. Set power at 80% normal

   a. 1000 rpm 1160 rpm to 1000 rpm
   b. 900 rpm to 1160 rpm to 900 rpm
   c. 850 rpm to 1160 rpm to 850 rpm

3. Set power at normal

   a. 1000 rpm to 1160 rpm to 1000 rpm
   b. 900 rpm to 1160 rpm to 900 rpm

4. Set power at take-off

   a. 1100 rpm to 1160 rpm to 1100 rpm
   b. 1050 rpm to 1160 rpm to 1050 rpm

4.4.3 Power lever transients. After completion of the condition lever transients, data will be recorded as specified in 3.2 for the following series of transients. (Reference Table III.) All lever movements shall be made in one second or less, with a pause to allow conditions to stabilize between burst and chop.

1. Set condition lever at 1015 rpm

   a. 80% normal to normal to 80% normal
   b. 60% normal to normal to 60% normal
   c. Flight idle to normal to flight idle
   d. Normal to take-off to normal
   e. 80% normal to take-off to 80% normal
   f. 60% normal to take-off to 60% normal
   g. Flight idle to take-off to flight idle

2. Set condition lever at 1160 rpm and repeat the power lever movements of 1.

4.4.4 Transient operation. After completion of the power lever transients, data will be recorded as specified in 3.2 for the following series of transients. (Reference Table III.)

1. Take-off to 80% normal to take-off
2. Take-off to 60% normal to take-off
3. Take-off to ground idle to take-off

4.5 Feathering and unfeathering checks. Check electrical and mechanical feathering and unfeathering operation at ground idle power of the test engine, at altitudes of 5000', 10,000', 20,000', and 30,000' with IAS of 150 and max attainable.

4.6 Taxi Tests

4.6.1 Make reverse transients at forward velocities of 0, 20, 40 and 60 mph IAS from the following test engine powers.

1. Flight idle
2. Normal
3. Take-off

4.7 Attitude checks.

4.7.1 With the test propeller operating at 80% of normal power, altitude of 20,000' and max attainable airspeed, check gearbox operation with the aircraft in level flight inclined 20° to each side for a period of five minutes.

4.7.2 With the test propeller operating at 80% normal power, altitude of 20,000' and max attainable airspeed, check gearbox operation with the aircraft in level flight inclined up to 45° to each side for a period of 30 seconds.

4.7.3 With the test propeller operating at 60% normal power, altitude of 20,000' check gearbox operation with the aircraft in as steep a nose-down attitude (45° max) as possible inclined 10° to each side for as long as possible.

4.7.4 With the test propeller operating at take-off power, altitude of 5000', check gearbox operation with the aircraft in the steepest possible nose-up attitude inclined 10° to each side for as long as possible.

4.7.5 With the test propeller operating at normal power, altitude of 20,000', check gearbox operation with the aircraft being flown in a manner to exert a zero "g" condition for a period of up to 30 seconds.

4.8 Flight cycles. The time necessary to accumulate a total of 50 hours of test will be made up of one-hour flight cycles as defined by Table III and Curve 1. Each cycle will be started at an altitude of 1000'. Half of the cycles will be run with an oil inlet temperature to the test engine and gearbox of 200-225°F, and the remainder with an inlet temperature as cold as possible.

5.0 SPECIAL INSTRUCTIONS

5.1 The oil used for the propeller shall be MIL-H-6083, and for the engine shall be MIL-L-7808.

5.2 The maximum input torque to the gearbox shall be 1135 ft-lbs.

5.3 The maximum steady state propeller speed shall be 1160 rpm.

5.4 The maximum allowable turbine inlet temperature shall be 1180°F.

5.5 Brake actuation pressure shall be 1600 psig maximum.

5.6 If safety of flight considerations indicate that #2 and #3 propellers should not be feathered in flight, avoid continuous operation of #2 and #3 engines between 1200 and 1600 rpm and between 2300 and 2600 rpm if #5 propeller is operating above flight idle power.

.7 Attitude checks.

:.7.1 With the test propeller operating at 80% of normal power, altitude of 20,000' and max attainable airspeed, check gearbox operation with the aircraft in level flight inclined 20° to each side for a period of five minutes.

:.7.2 With the test propeller operating at 80% normal power, altitude of 20,000' and max attainable airspeed, check gearbox operation with the aircraft in level flight inclined up to 45° to each side for a period of 30 seconds.

.7.3 With the test propeller operating at 60% normal power, altitude of 20,000' check gearbox operation with the aircraft in as steep a nose-down attitude (45° max) as possible inclined 10° to each side for as long as possible.

.7.4 With the test propeller operating at take-off power, altitude of 5000', check gearbox operation with the aircraft in the steepest possible nose-up attitude inclined 10° to each side for as long as possible.

.7.5 With the test propeller operating at normal power, altitude of 20,000', check gearbox operation with the aircraft being flown in a manner to exert a zero "g" condition for a period of up to 30 seconds.

.8 Flight cycles. The time necessary to accumulate a total of 50 hours of test will be made up of one-hour flight cycles as defined by Table III and Curve 1. Each cycle will be started at an altitude of 1000'. Half of the cycles will be run with an oil inlet temperature to the test engine and gearbox of 200-225°F, and the remainder with an inlet temperature as cold as possible.

0 SPECIAL INSTRUCTIONS

1 The oil used for the propeller shall be MIL-H-6083, and for the engine shall be MIL-L-7808.

2 The maximum input torque to the gearbox shall be 1135 ft-lbs.

3 The maximum steady state propeller speed shall be 1160 rpm.

4 The maximum allowable turbine inlet temperature shall be 1180°F.

5 Brake actuation pressure shall be 1600 psig maximum.

6 If safety of flight considerations indicate that #2 and #3 propellers should not be feathered in flight, avoid continuous operation of #2 and #3 engines between 1200 and 1600 rpm and between 2300 and 2600 rpm if #5 propeller is operating above flight idle power.

TABLE I

Parameter	Range	Visual	Automatic Recording
Aircraft attitude		x	
Blade Angle (Front)	-21° to +83°	x	x
Control temperature	0 to 300°F	x	
High pitch pressure	0 to 1300 psi	x	x
Low pitch pressure	0 to 800 psi	x	x
Pitchlock pressure	0 to 300 psi	x	x
Gearbox vent pressure	0 to 5 psi	x	
Gearbox lube pump inlet pressure	-25" to +25 psi	x	
Gearbox scavenge pressure	0 to 30 psi	x	
Gearbox lube pressure	0 to 150 psi	x	
Gearbox lube flow	0 to 75 qpm	x	
Gearbox lube in temperature	0 to 225°F	x	
Gearbox lube out temperature	0 to 275°F	x	
Gearbox vibration (3)	0 to 20 mils	x	
Brake pressure	0 to 1600 psi	x	
Power turbine rpm	0 to 17000 rpm	x	x
Gas generator rpm	0 to 19000 rpm	x	
Torque	0 to 1200 ft-lbs.	x	
Fuel Flow	0 to 1500 pph	x	x
Turbine inlet temperature	0 to 1180°F	x	
Engine oil temperature	0 to 250°F	x	
Engine oil pressure	0 to 100 psi	x	
Engine vibration (4)	0 to 5 mils	x	
Power lever	0 to 125°	x	x
Condition lever	0 to 160°	x	x
Outside air temperature		x	
Aircraft weight		x	

TABLE II

Nacelle Temperature Survey

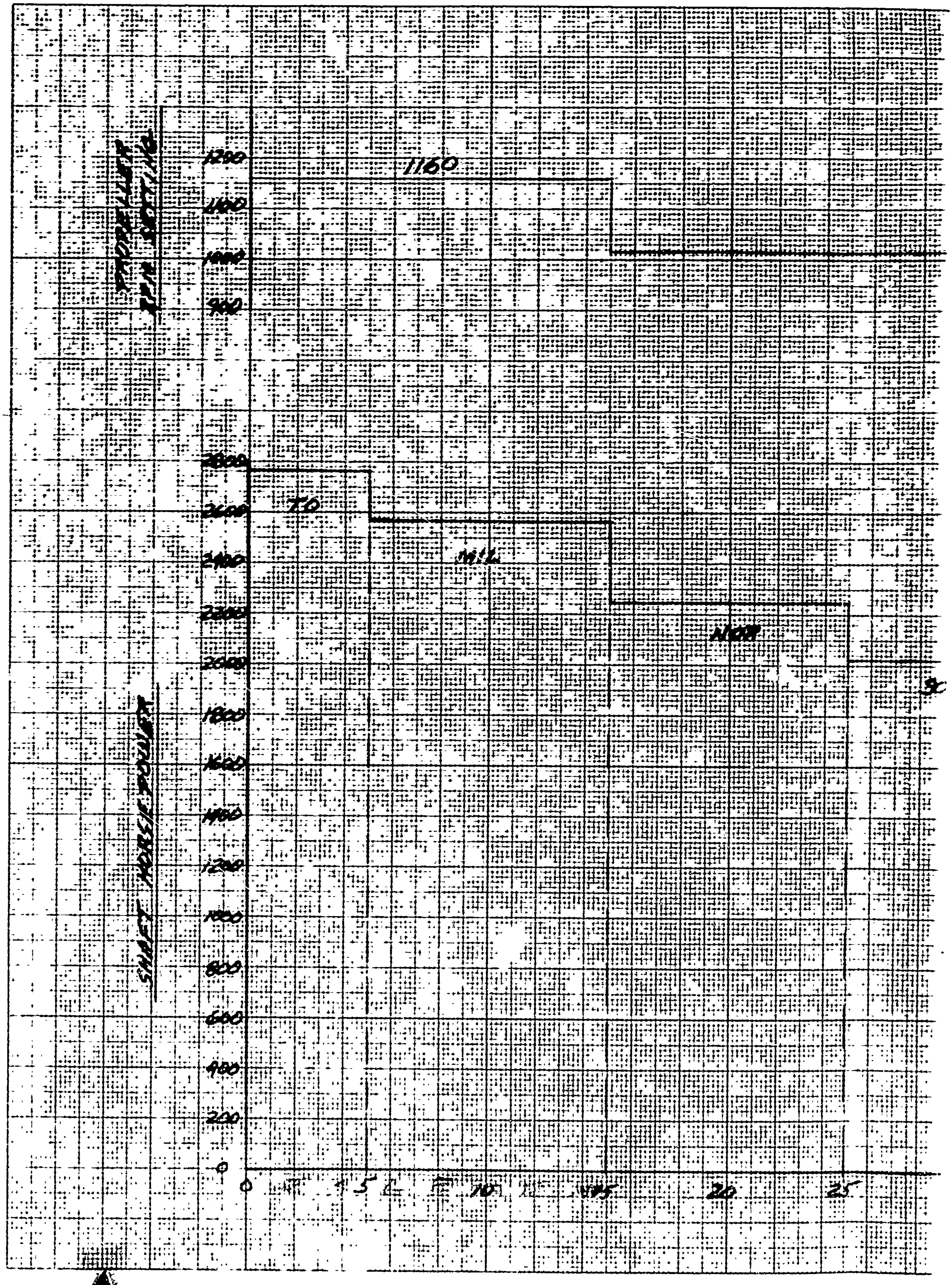
All temperatures are washer type T/C's

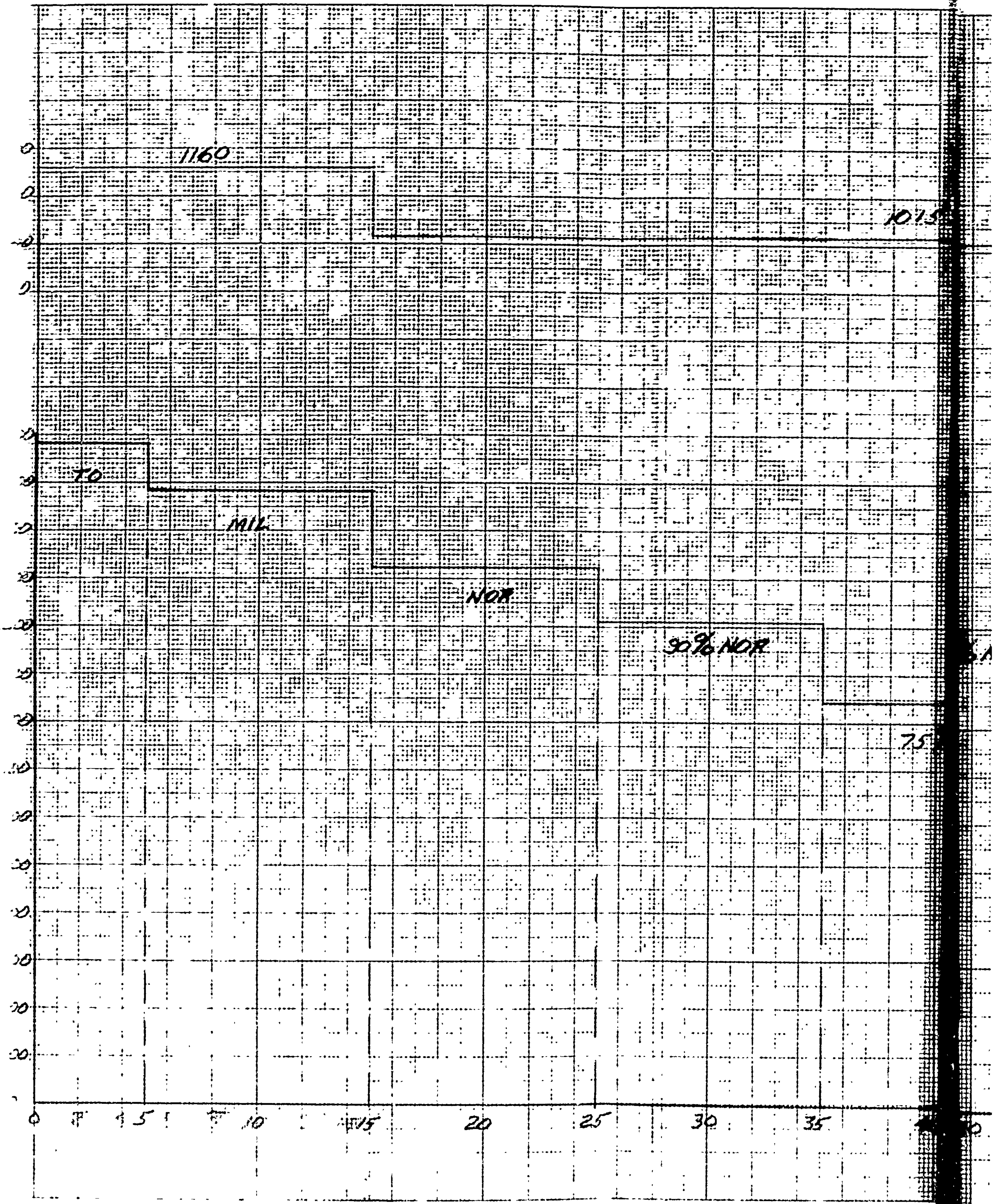
Location	Range
Engine:	
Strut mount pad top	0-300°F
Accy. case bolt circle	0-300°F
Burner case top	0-1000°F
Turbine casing forward top	0-1000°F
Turbine casing aft top	0-1000°F
Lord mount	0-300°F
Nacelle:	
Firewall beam	-300°F
Propeller-Gearbox:	
Control	0-300°F
Gearbox Rear	0-300°F
Lube oil in	0-300°F
Lube oil out	0-300°F

TABLE III

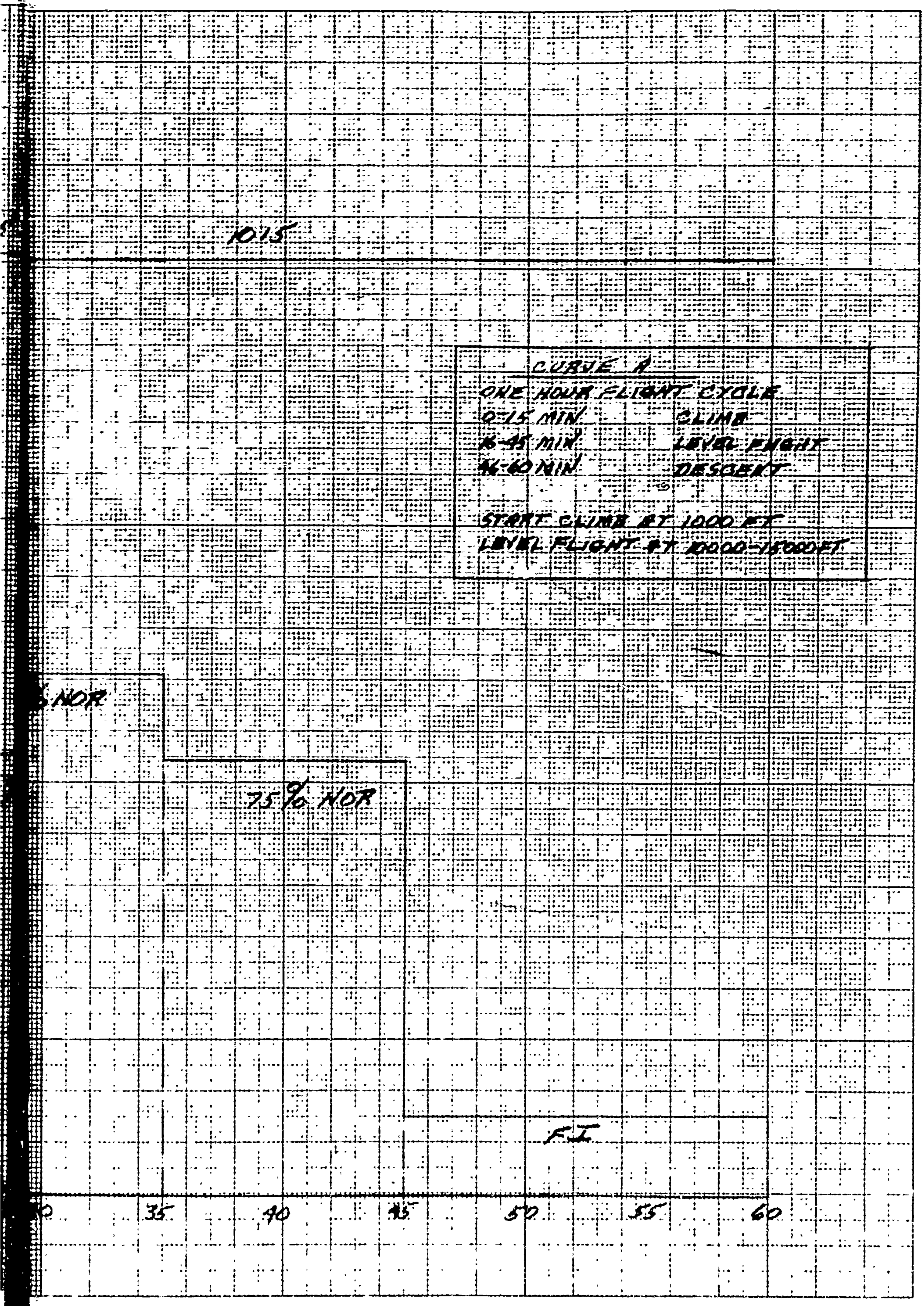
Test Conditions

Condition	Nominal Power (hp)	Propeller Speed Setting (rpm)	Input Torque (ft-lbs)
Take-off	2765	1160	1036
Military	2570	1160	963
Normal	2245	1015	961
90% Normal	2020	1015	865
80% Normal	1796	1015	769
75% Normal	1684	1015	721
60% Normal	1347	1015	577
Flight idle	300 max.	---	---
Ground idle	190 max.	---	---
Reverse	2530	1160	947


SHAFT HORSEPOWER
1200
1100
1000
900
1160
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
TO
MIL
NOR
0
5
10
15
20
25



B


1015
CURVE A
ONE HOUR FLIGHT CYCLE
0-15 MIN CLIMB
16-45 MIN LEVEL FLIGHT
46-60 MIN DESCENT
START CLIMB AT 1000 FT
LEVEL FLIGHT AT 10000-15000 FT
NOR
75% NOR
F.I.
35
40
45
50
55
60

C

PLAN OF TEST

JOB: Vibration Survey of VC86260 Propeller
PLAN PREPARED BY: H. E. Deabler

PROJECT & ORDER: 104-B01-100A
APPROVED BY: H. F. Deabler

INSTRUCTION: Vibration Test Program No. 1326
TEST ENGINEER:

TIME PERIOD: February, 1966 TO July, 1966 .

1. WHAT IS ITEM BEING TESTED?

2. WHY IS TEST BEING RUN? WHAT WILL RESULTS SHOW OR BE USED FOR?

3. DESCRIBE TEST SET UP INCLUDING INSTRUMENTATION. ATTACH SKETCH OF INSTALLATION.

4. ITEMIZE RUNS TO BE MADE GIVING LENGTH OF EACH AND READINGS TO BE TAKEN.

5. SPECIAL INSTRUCTIONS: SAFETY PRECAUTIONS FOR OPERATORS AND HANDLING EQUIPMENT. OBSERVATIONS BY SIGHT, FEEL, OR HEARING. LIST POINTS OF OBSERVATION WHICH MIGHT CONTRIBUTE TO ANALYSIS OF (A) PERFORMANCE OF UNITS, (B) INCIPIENT TROUBLE BEFORE IT OCCURS, AND (C) CAUSE OF FAILURE.

6. HOW WILL DATA BE USED OR FINALLY PRESENTED? GIVE SAMPLE PLOT, CURVE, OR TABULATION AS IT WILL BE FINALLY PRESENTED.

NUMBER ENTRY AS LISTED ABOVE AND DESCRIBE BELOW

1. VC 86260/2FD14A3-6, 2FE14A3-6 Propeller.

3. VC 86260 propeller on fuselage nose mounted T-64-GE-1 in UAC Experimental B-17 aircraft.

3.1 Strain gage hookups:

	Ground		Flight	
Channel	"A" Diode Pos.	"B"	"A" Diode Pos.	"B"
1	45"-1F	10"V-1F	10"-1F	L.E. - 1F
2	45"-1R	10"V-1R	33"-1F	L.E/ - 1R
3	10"-1F	10"-1F	45"-1F	L.E. -2F
4	10"-1R	10"-1R	90°-1F	L.E. - 2R
5	L.E.-1F	10"V-2F	10"-1R	10"V-1F
6	L.E.-1R	10"V-2R	33"-1R	10"V-1R
7	L.E.-2F		45"-1R	
8	L.E.-2R		90°-1R	
9	90° -1F		45"-2F	
10	90° -1R		45"-2R	
11	1P Speed/Phase Pulse		1P Speed/Phase Pulse	
			Aircraft C. G. Vertical acceleration	

GROUND TEST CONDITIONS

Conditions without reference numbers to POT 128PT-93 are additions.
Refer to Table III, attached, for power conditions.

4. Ref. POT 128PT-93 Headwind and Crosswind from 90° R. B.

4.4.1 Steady state operation

1. Ground Idle
2. Flight Idle
3. 60% Normal
4. 80% Normal
5. Normal
6. Take-off

4.4.2 Condition lever transients, 1 second or less

1. Set power at 60% normal
   c. 850 rpm to 1160 rpm to 850 rpm

2. Set power at 80% normal
   c. 850 rpm to 1160 rpm to 850 rpm

3. Set power at normal
   b. 900 rpm to 1160 rpm to 900 rpm

4. Set power at take-off
   b. 1050 rpm to 1160 rpm to 1050 rpm

4.4.3 Power lever transients, 1 second or less

1. Set condition lever at 1015 rpm
   g. Flight idle to take-off to flight idle

2. Set condition lever at 1160 rpm
   g. Flight idle to take-off to flight idle

4.6.1 Reverse Transients

1. Flight idle to reverse to flight idle
2. Normal to reverse to normal
3. Take-off to reverse to take-off

Record during a normal start

4.6.1 Taxi tests-reverse transients at forward velocities of 20, 40, and 60 mph IAS

1. Flight idle to reverse to flight idle
2. Normal to reverse to normal
3. Take-off to reverse to take-off

FLIGHT TEST CONDITIONS

4. Ref. POT 128PT-93

4.7.3 With the test propeller operating at 60% normal power, altitude of 20,000 ft., check gearbox operation with the aircraft in as steep a nose-down attitude (45° max.) as possible, 10° of roll to each side for as long as possible, Record stresses after condition is set.

4.7.4 With the test propeller operating at take-off power, altitude of 5,000 ft., check gearbox operation with the aircraft in the steepest possible nose-up attitude, 10° of roll to each side for as long as possible. Record stresses after condition is set.

4.7.5 With the test propeller operating at normal power, altitude of 20,000 ft., check gearbox operation with the aircraft being flownin a manner to exert a zero "g" condition for a period of up to 30 seconds. Record stresses after condition is set.

4.8 Flight cycles (as defined in Table III, attached) altitude 5,000 ft. Record stresses at each cycle condition: Take-off, Military, Normal, 90% Normal, 80% Normal, 75% Normal, 60% Normal, Flight Idle, Ground Idle.

Variable airspeed and yaw runs-normal rated power.

1. From minimum IAS to maximum IAS in 50 mph increments. Record stresses at zero, maximum left yaw and maximum right yaw at each airspeed. Altitude 10,000 ft.

Variable power runs - normal rated RPM

1. At minimum airspeed vary power from Flight Idle to NRP in 5 increments. Altitude 10,000 ft.

4.4.1 Steady state operation. 5,000 and 30,000 ft. altitude as limited by engine power.

1. Ground idle
2. Flight idle
3. 60% Normal
4. 80% Normal
5. Normal
6. Take-off

4.4.2 Condition lever transients, 1 second or less. 5,000 and 30,000 ft. altitude

1. Set power at 60% normal
   c. 850 rpm to 1160 rpm to 850 rpm

2. Set power at 80% normal
   c. 850 rpm to 1160 rpm to 850 rpm

3. Set power at normal
   b. 900 rpm to 1160 rpm to 900 rpm

4. Set power at take-off
   b. 1050 rpm to 1160 rpm to 1050 rpm

4.4.3 Power lever transients, 1 second or less. 5,000 and 30,000 ft. altitude.

1. Set condition lever at 1015 rpm
   g. Flight idle to take-off to flight idle

2. Set condition lever at 1160 rpm
   g. Flight idle to take-off to flight idle

4.4.4 Transient operation, after completion of power lever transients. 5,000 and 30,000 ft. altitude.

3. Take-off to ground idle to take-off. (as defined in Table III, attached)

4.5 Feather and unfeather. 5,000 ft. altitude. Operation at ground idle power. At 150 mph IAS and maximum attainable IAS.

TABLE III

TEST CONDITIONS

Condition	Nominal Power hp	Propeller Speed Setting rpm	Input Torque (ft-lbs)
Take-off	2765	1160	1036
Military	2570	1160	963
Normal	2245	1015	961
90% Normal	2020	1015	865
80% Normal	1796	1015	769
75% Normal	1684	1015	721
60% Normal	1347	1015	577
Flight Idle	300 max.	-	-
Ground Idle	190 max.	-	-
Reverse	2530	1160	947

HAMILTON STANDARD

EXPERIMENTAL INSPECTION REPORT

W°O. 102-A05-100A

COPIES:
1. Engineer (white) R.W. Cushman
2. Government (green) S. Hrach 9/10/65
( )USAF ( )NAVY ( )C.A.A.
3. Exp. Ass'y. (yellow) John Lichatz
(sign to verify inspection)

Pre- TEST ~~XXXX XXXXXXXXX~~
GEAR BOX Assembly
Parts List SK 56029
Experimental No. GB.104
Ass'y Record No. 4
Insp. Date 8 Sept. 65

Test No.
Sheet No.
Test Date
No. of Pages
Page No.
(designate by 3A, 3B, etc.)

50 Hour P.F.R.T. Per Plan of test # 128PT-89

Part No.	Part Name	Quan.	Mt.	Condition of Part	Recommendation or Disposition
SK 56029	GEAR -Box	1		Note: Original assembly of this Gear Box	
			has	been listed as SK 49741 and SN. GB 104.	All
			work	has been catlog'd as Development Tests.	Upon
			visual,	Magnaflux, and Zyglo inspection; all	details
			were	found to be acceptable for further use	per the
			above	P.O.T.	
				Those details that are different than original	
			parts	list will be stamped in on the new parts list (N).	
				Those parts that are original, will be shown (U).	
				Those parts that have been reworked are listed (R).	
				All "O" rings, AN parts, standard hardware, will	
			be	replaced as new at assembly. Any questionable details	
			are	listed below.	
574600	Housing - Assy	1		Paint removed on outer areas	(Touch up)
SK56002	Shaft - Post	1		O.D. has stains and light scratches depressions	(clean up) OK
ETG 2740-6	Shaft	1		Discoloration from seal and Rust at the	
			under	cut area adj. to threaded end.	(clean up) OK
574785	Valve -housing	1		Outer surface has heavy scratches	(clean up) OK
ETG 2740-3	Nut	1		Slots marred at assembly and disassembly.	(clean up) OK
574705	Nuts	2		Light scratches ~~##~~.	(ok as is) OK
574614	Retainer	1		Light stains	(ok as is) OK
574609	Plate - Ret.	1		Screw head impressions (4 places)	(ok as is) OK
574538	Retainer	1		O.D. area annodize removed various places	(clean up)
128X-421x	Pinion-Gear	1		Bearing Dia's. ~~XXXXX~~ scratched see note (see Table III)	OK to use (clean up)

Co Insp. John Lichatz 9 Sept 1965

OK to use. S. Hrach DCASO 9/10/65

HS F-182D 12/57

HAMILTON STANDARD

EXPERIMENTAL INSPECTION REPORT

COPIES:
1. Engineer (white) E F Dooling 4/
2. Government (green) [illegible]
( )USAF ( )NAVY ( )CAA
3. Exp. Ass'y. (yellow) John Sicheatz (sign to verify inspection)

After TEST
GEAR BOX Assembly
Parts List SK 56029
Experimental No. GB 10?
Ass'y Record No. 1
Insp. Date 20 October 55

Test No.
Sheet No.
Test Date
No. of Pages
Page No. 1 (designate by 3A, 3B, etc.)

(73EGB1) 50 Hour P.F.R.T. TEST Per P.O.T. # 128 PT. 89

Part No.	Part Name	Quan.	Mt.	Condition of Part	Recommendation or Disposition
SK 56029	GEAR BOX	1		Above P.O.T. has been completed in 4?? test cell at H.S. and returned for disassembly.	
				Upon a visual, Magnaflux, and Zyglo inspection, all details show no indications or discrepancies beyond some normal assembly and wear indications, which are listed below:	
577882	Front Main Hsg	1		Detail Brg liners have evidence of Brg Installation + Removal interference marks.	ok
574600	Main-Rear Hsg	1		Same as above & liners have stains.	ok
SK56006	Oil-Shaft Transfer	1		Large O.D. has nicks - either side of groove	(light stone)
SK56003	Ret-Nut-Blkd	1		Both ends nicked and scratched	ok
ETG-2740-6	Spline shaft	1		Heat discoloration at seal end also wear pattern at opposite end.	(clean up)
583666	Fluid trans tube	1		Heavily scored - One end has galling	(light stone [illegible])
577789	Plug	1		Minor OD has slight galling.	ok
574616	Spur Gear	1		Brg - Pressure Patterns on one end.	ok
574678	Spray Box	1		Stained areas on OD.	ok
574550	Large Spur Gear	1		Brg-Areas have pressure scored marks	ok
574523	Brg Nut	1		Slots heavily scored - slight pressure patterns on face.	ok
574804 (583726)	Brg Ret Nut	1		Slots marked - Both faces have pressure patterns.	ok
(R) 28X421 X	Pinion Gear	1		Brg pressure score marks on (2) ends.	ok
574137	Liners	1		Light Burnishing on OD - ID.	ok
574785	Valve Hsg.			ID has heavy polishing effects. OD also has slight scratches thru Hard coat.	ok
574565	Planet Support	1		Various surfaces Nicked - Brg dia's scored	(light stone)
574538	Retainer	1		OD nicked + scored Thru anodize	(touch up [illegible])
574582	Spur Gear-Alternator	1		Seal wear pattern at both ends of shaft.	ok
SK56002	Prop Shaft	1		Stain & Rust on tail shaft.	(clean up)

START FLANGE TEST 12E-PT-89 PAR 4.2

LOG OF 73EGB1 GEAR BOX

37165
37455
37760
38406
38865
39101
39181

HAMILTON STANDARD

T-77.3-783

A

TEST OF 50 Hr. PERT OF SK56029 GEARBOX S/...

STAND E-HOUSE WORK ORDER NO. 102-A05-100A ENGINE ...

REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS

PROP. ASS'Y. NO. N220566 HUB DESIGN NO. VC86260 BLADE DESIGN NO. ______ FUEL CON...

LOG OF 73EGB1 GEAR BOX

START elan of TEST 128-PT-691 Par 4.2

	TIME				ATM	TEMP.			POWER						
	A.M. P.M.	TOTAL TEST 37^35	TOTAL ENGINE 109^30	TOTAL PROP. 37^35	BARO BAR	MAX T.I.T. °F	T.I.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	TORQ. PSI 1.025 X	BLADE ∡	P L A	COND. LEVER
						DRAINED Engine Lube SYSTEM AND									
					29.96	ENG., + STAND, 400 cycles ON, 115 VOLT									
	START 1320		109^20			830	1000	62	13253	5562	351	40		31	
	STOP 1335	37^40	109^35	37^40		To check Rigging on input lever									
	START 1355	37^40	109^35	37^40		866	1024	62	13275	5510	438	27		-	
	STOP 1400	37^45	109^40	37^45											
	START 1405	37^45	109^40	37^45		864 Rigging Problem									
37165	START 1520	37^45	109^40	37^45		851	1028	64	13220	5277	443	34		31	
37455	1550	38^15	110^10	38^15			1120	63	16976	12268	1017	777		63	
	1620	38^45	110^40	38^45			1010	66	13464	5531	457	38		31	
	STOP 1625	38^50	110^45	38^50		CHECK oil - BLEED Buffer Piston									
37760	START 1720					840	1004	66	13344	5478	453	35	2	31	89
	1750						924	66	13906	6444	507	63	2	33	92
	STOP 1820	39^50	111^45	39^50		Added 3 ozs. oil Bleed									
38406	START 1830					874	1000	66	13302	7357	449	29	2	31	92
	STOP 1840	40^00	111^55	40^00		STOP FOR STATIC RUNNING PAR									
	START 1850					869	1040	66	13288 ~~9482~~	5377	448	28	2	31	95
	STOP 1920	40^30	112^30	40^30											
38865	START 2020					846	990	66	13119	5267	437	26	2	31	86
	2035	42^05	114	42^05		START FLIGHT CYCLE #1									
	2045	42^15	114^10	42^15			1158	67	17777	14123	1165	705	2	68	85
39101	2050	42^30	114^15	42^30			1160	68	17205	14107	1169	729	2	69	85
39184	STOP 2100	41^30	113^05	41^30		854 To REPAIR THERMOCOUPLE G/B OIL									
	START 2200	41^10	119^05	41^10		854	1036	67	13238	5340	442	32	2	31	35
	ST 2220	42^50	114^45	42^50		Re-STARTING FLIGHT CYCLE									

DAILY H.P. READING @ T.O. Witness insp Sasnick 10/1/65

HAMILTON STANDARD

T-77.3-783

A

T OF SK56029 GEARBOX S/N 104 VC86260-5 Prop 36

WORK ORDER NO. 102-A05-100A ENGINE YT-64 SERIES 1 NO. 2 SE

CONSTANT .5252 SPECIAL PARTS

HUB DESIGN NO. VC86260 BLADE DESIGN NO. FUEL CONTROL NO. FUEL PUMP NO. PRESS. VALVE PUM

TIM	TEMP.			POWER							FUEL			ENGINE PRESSURES					ENGINE OIL		ENGINE
RU AR	MAX. T.I.T. °F	T.I.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	1.025 X TORQ. PSI	BLADE ∠	P L A	COND. LEVER	FLOW LBS / HR.	MANI-FOLD PSI	PSIG SUPPLY	DIFF VENT	COMP. DISCH	COMP. INLET H2O	TURB VENT	FRONT COMP. VENT	IN #18 TEMP °F out #19	MAIN PSI	COMP DISCH
	DRAINED Engine lube SYSTEM AND Filled WITH clean MIL-L-7808 oil																				lef
7.6	ENG. + STAND. 400 cycles ON, 115 VOLTS Power ON INSTRUMENTATION C. I																				
	830	1000	62	13253	5,562	351	40		31		✓	260	13		30	-28			—	42	30
	To check Rigging on input lever																				
	866	1024	62	13225	5,510	438	27		-		✓	✓	✓		✓	-2.7			—	✓	✓
	864 Rigging Problem																			36	
	851	1028	64	13220	5277	443	34		31			260	14		29	-2.6			166/186	42	29
		1120	63	16976	12268	1017	777		63		739	400	12		123	-22.3			212/269	55	23
		1010	66	13464	5531	457	38		31		✓	260	13	-	30	-3.0	-	-	205/225	35	30
	CHECK oil - BLEED Buffer Piston - Added 3 ozs of oil																				oz
	840	1004	66	13344	5478	453	35	2	31	89	—	260	14	—	30	2.9	—	—	197/218	31	30
		924	66	13906	6444	507	63	2	33	92	—	255	13.5	—	36.5	3.6	—	—	208/231	37	36.5
	Added 3 ozs. oil Bleed Buffer Piston																				to
	874	1000	66	13302	7357	449	29	2	31	92	—	255	14	—	29.5	2.8	—	—	203/223	35	29.5
	STOP FOR STATIC RUNNING PAR. 4.2.3.3 through PAR. 4.2.3.5																				
	869	1040	66	~~9482~~ 13288	5377	448	28	2	31	85	—	255	14	—	29	2.7	—	—	203/222	34	29
	846	990	66	13119	5267	437	26	2	31	86	—	250	14	—	28	2.6	—	—	173/193	36	28
	START FLIGHT CYCLE #1																				
		1158	67	17177	14123	1165	705	2	68	85	1292	430	13	—	129	21.8	—	—	203/262	57	129
		1160	68	17205	14101	1169	729	2	69	85	1302	425	12.5	—	131	25	—	—	182/255	51	131
	854 TO REPAIR THERMOCOUPLE (G/B OIL IN) TO CHECK PROP PRESSURES.																				
	854	1036	67	13238	5340	442	32	2	31	35	239	260	14	—	28.5	2.7	—	—	178/200	31/32	28.5
	Re-STARTING FLIGHT CYCLE #1. Per Par 4.3																				

Witness [illegible] 10/1/65 — WITNESS — R.J. Powers DCASO, WL - [illegible]

B

Prop 76260-5 Prop S/N N220566 DATE 10-1-65 SHEET NO. 1

1 NO. 2 SERIES 1 NO. 220108 ENGINEER D. Leishman OPERATOR T. Purzycki

HELPERS F. Jarvis P. Gendron

PRESS. VALVE PUMP NO. PRESS. VALVE NO. BLEED GOV. NO. BLEED CONTROL NO. COORD. NO.

	ENGINE OIL	ENGINE PRESSURES						ENGINE OIL			GEAR BOX					PROP. PRESS				VIB. METERS			
B T	FRONT COMP. VENT	IN #18 TEMP OUT #19	MAIN PSI	COMP. DISCH	COMP. INLET H_2O	TURB VENT	FRONT COMP. VENT	IN #18 TEMP OUT #19	MAIN PSI	MAIN PSI IN / OUT	LUBE PSI	SCAV PSI IN / OUT	LUBE TEST °F IN #15 / OUT #16	RPM LUBE FLOW	VENT	CONTROL IN	HI PITCH	LO PITCH	Pitch Lock	Engine 1 2 / 3 4	G/B 1 / 2	G/B 3 / 4	G/B 5 / 6
-L-7808 oil lean MIL-L-7808 oil, also oil checked G/B. Checked																							
mentation C. Instrumentation calibrated &. PLA																							
		—	42	30	-28			—	42	14.7 / 1.5	9	1.0 / 3		23.6		20	✓	✓	✓	1.3 .6 / 1.0 2.2	0 / 1.6	1.2 / 0	1.0 / 0
		—	✓	✓	-2.7			—	✓					21.8			✓	✓	✓				
			36						36					23.4		witness J. Sickels 10-1-65							
		166 / 186	42	29	-2.6			166 / 186	42	16.5 / 1.5		1.2 / 2.0	166 / 149	23.2	0	12	18	110	225	1.1 .8 / 1.0 2.5	0 / 3.0	1.2 / 0	2.0 / 0
		212 / 269	55	23	-22.3			212 / 269	55	13.5 / 2.9	52		216 / 226	52.4	0	8	170	100	220	1.8 .4 / 1.0 1.7	0 / 1.0	2.0 / 0	.8 / 0
	-	205 / 225	35	30	-3.0	-	-	205 / 225	35	16.5 / 1.7	9	1.1 / 3.0	207 / 189	24.1	0	12	10	110	220	1.6 .8 / .4 2.0	0 / 1.0	1.0 / 0	.5 / 0
oil ozs of oil																							
	—	197 / 218	31	30	2.9	—	—	197 / 218	36	16 / 1.5	8.5	1.1 / 12.8	197 / 179	23.5	0	12.2	12	115	222	1.8 .5 / .5 2.4	0 / 1.5	1.4 / 0	1 / 0
	—	208 / 231	37	36.5	3.6	—	—	208 / 231	37.5	14.4 / 1.7	11.2	1.1 / 15.9	211 / 194	26.5	0	11.5	15	110	220	1.7 .6 / .4 2.	0 / 1	2.5 / 0	.5 / 0
			to N.																	~~1.5 .6 / .4 2.~~	~~0 / 1.5~~	~~1 / 0~~	~~1.5 / 0~~
	—	203 / 223	35	29.5	2.8	—	—	203 / 223	35	16 / 1.5	8	1.1 / 12.5	204 / 186	23.2	0	12.5	10	112	220	1.5 .6 / .4 2.1	0 / 1.5	1 / 0	1.6 / 0
. 4.2.3.5 right PAR. 4.2.3.5																							
	—	203 / 222	34	29	2.7	—	—	203 / 222	34.5	16 / 1.5	7.5	1.1 / 12.5	204 / 186	23.1	0	12.5	14	114	221	1.6 .4 / .4 2.	0 / 1.8	1 / 0	1.4 / 0
	—	173 / 193	36	28	2.6	—	—	173 / 193	36.7	16.5 / 1.5	8	1.1 / 12.6	181 / 163	22.9	0	12.5	12	112	222	1.6 .3 / .7 1.2	0 / 2.1	.6 / 0	1.1 / 0
	—	203 / 262	57	29	21.8	—	—	203 / 262	57	12.5 / 2.9	66	1.1 / 30	213 / 222	59.4	0	8.	270	100	220	1.9 .9 / 1.2 2.3	0 / 1.1	2.3 / 0	.8 / 0
	—	182 / 255	56	31	25	—	—	182 / 255	56	12.5 / 2.9	61	1.1 / 29.5		59	0	8.1	290	75	220	1.7 .6 / 1. 1.9	0 / 1.3	2 / 0	.5 / 0
ressures. Prop Pressures.																				~~1.5 .9 / 1.1 2.~~	~~0 / 2.5~~	~~1.1 / 0~~	~~1.9 / 0~~
	—	178 / 200	36 (~~32~~)	18.5	2.7	—	—	178 / 200	36 (~~32~~)	15.7 / 1.5	8.5	1.1 / 10	173 / 159	23.1	0	12.5	12	112	221	1.5 .9 / .5 2.	0 / 2.5	1.1 / 0	1.9 / 0
				4.3																			

ASO, WL - [signature] DCASO, WL - 10-1-65

FUEL METER READING

C [signature] 10-11-65

TEST OF 50 HR. PFRT OF SK 56029 GEARBOX S/N 1041 VC 5[illegible]-5 P[illegible]
STAND E-House WORK ORDER NO. 122-A05-1009 ENGINE YT-64 SER[illegible]
REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS
PROP. ASS'Y. NO. N220566 HUB DESIGN NO. VC80260 BLADE DESIGN NO. FUEL CONTROL NO. FUEL PUMP

LOG OF 73EGB1 GEAR BOX

	TIME				ATM	TEMP.			POWER							FUEL			ENGINE P	
	A.M. P.M.	TOTAL TEST	TOTAL ENGINE	TOTAL PROP.	TRUE BAR	MAX. T.L.T. °F	T.L.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	TORQ. PSI	BLADE ∠	P L A	COND. LEVER	FLOW LBS / HR.	MANI-FOLD PSI	FUEL SUPPLY	DIFF VENT	COMP. DISCH
39373	2225	41^{35} 42	113^{30} 114	41^{35} 42			1036	67	13238	5340	442	32	2	31	35	239	260	14	—	28.5
						Making Taxi Cycles.														
39478	2230						1158	68	17139	14017	1163	700	2	67	85	1278	420	13	—	129
39537	2235						1160	67	19167	14055	1164	735	3	68	85	1301	425	13	—	132
39592	2240						1160	65	17173	12516	1138	835	10.5	58	69	1311	425	12	—	133.5
39689	2250						1160	64	17188	12516	1038	815	11	68	69	1324	430	12	—	133.5
39791	2300						1065	63	16735	11809	971	721	11.5	60	67	1127	390	12	—	119
39873	2310						922	61	13790	5400	447	68	10	33	67	228	250	13	—	36
						1 Minute Reversal.														
39929	2315					Running Taxi Cycles.														
39965	2320					Complete Cycle #1 Starting cycle #2														
40078	2330	42^{40}	114^{25} 115	42^{50}			1160	63	17090	14032	1185	720	2	67	85	1300	425	13	—	131
40385							1058	61	16630	11643	938	721	12	59	67	1099	39	12	—	118
	STOP 00^{20}	43^{20}	115^{25}	43^{30}		Completed Flight Cycle #2.														

Witness

HAMILTON STANDARD

T-77.5 1/63

DAILY H.P. READING @ T.O.

Witness. [illegible] Sosnicki 10/1/65.

C 501-D-5 PROP S/N H220566 DATE 10-1-65 SHEET NO. 2

SERIES 1 NO. 220108 ENGINEER D. Leishman OPERATOR P. Gendron

HELPERS P.A. Bertrand

NO. FUEL PUMP NO. PRESS. VALVE NO. BLEED GOV. NO. BLEED CONTROL NO. COORD. NO.

FUEL		ENGINE PRESSURES					ENGINE OIL			GEAR BOX					PROP. PRESS				VIB. METERS			
MANIFOLD PSI	FUEL SUPPLY	DIFF VENT	COMP. DISCH	COMP. INLET H2O	TURB VENT	FRONT COMP. VENT	TEMP °F #18 / #19	MAIN PSI	MAIN PSI IN / OUT	LUBE PSI	SCAV PSI IN / OUT	LUBE TEST °F #15 IN / OUT	GPM LUBE FLOW	VENT	CONTROL IN	HI PITCH	LO PITCH	Pitch Lock	Engine 1 / 2	G/B 1 / 2	G/B 3 / 4	G/B 5 / 6
260	14	—	28.5	2.7	—	—	178 / 200	36	15.7 / 1.5	8.5	1.1 / 10	173 / 139	23.1	0	12.5	12	112	221	6 .8 / 4 2.	0 / 2.6	1.0 / 0	1.9 / 0
120	13	—	129	24.5	—	—	204 / 263	56	12.5 / 2.9	66	1.1 / 26.5	205 / 225	59.8	0	7.5	230	105	220	9 .8 / .1 2.5	0 / 1.8	2.5 / 0	.5 / 0
125	13	—	132	25.1	0	—	213 / 271	56	12.5 / 2.9	66	1.1 / 29.5	212 / 235	59.3	0	7.5	210	105	220	21 .9 / .1 2.1	0 / 1.5	1.8 / 0	.5 / 0
125	12	—	133.5	25.3	—	—	215 / 273	56	12 / 2.8	53	1.1 / 27	215 / 233	53.7	0	8.	170	105	220	9 .6 / .6 2	0 / 1.4	3.5 / 0	.9 / 0
130	12	—	133.5	25.5	—	—	214 / 273	56.5	12.5 / 2.8	53	1.1 / 27	214 / 230	53.8	0	8.	210	105	220	9 .7 / [illegible]	0 / 1.9	3.5 / 0	1.1 / 0
90	12	—	119	21.7	—	—	174 / 170	54	13 / 2.6	48	1.1 / 26	113 / 125	50.8	0	8.5	35	125	220	2 .6 / .1 .1	0 / 1.9	1.9 / 0	1.5 / 0
250	13	—	36	3.3	—	—	212 / 237	36.2	16 / 1.7	8	1.1 / 10.3	210 / 199	23.4	0	11.9	17	109	220	2 .3 / 4 1.8	0 / .9	.5 / 0	.8 / 0
104 C #																						
125	13	—	131	24.8	—	—	210 / 266	56.5	12 / 2.9	66	1.1 / 29.2	209 / 230	59.6	0	7.8	180	115	220	7 .7 / 1 2.1	0 / 1.2	2.5 / 0	.5 / 0
39	12	—	118	21.3	—	—	213 / 267	53	13 / 2.6	42	1.1 / 25	213 / 221	48.9	0	8.6	18	125	220	1.8 .9 / .8 .1	0 / 2.5	2 / 0	1. / 0

Witness

R. Power, DCASO, W.L
10/1/65

E. Dowling
10-1-65

FUEL METER READING

TEST OF 50 HR. PERT OF SK56029 GEARBOX S/N 104 VC 86260-5 PROP S...

STAND E-HOUSE WORK ORDER NO. 102-ADS-100A ENGINE YT64 SERIES 1

REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS

PROP. ASS'Y. NO. N220566 HUB DESIGN NO. VC86260 BLADE DESIGN NO. FUEL CONTROL NO. FUEL PUMP NO.

LOG OF 73EGBT GEAR BOX

	TIME				ATM	TEMP.			POWER							FUEL			ENGINE PRESSURES			
	A.M. P.M.	TOTAL TEST	TOTAL ENGINE	TOTAL PROP.	TRUE BAR	MAX. T.I.T. °F	T.I.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	1.025 X TORQ. PSI	BLADE 4	P L A	COND. LEVER	FLOW LBS / HR.	MANI-FOLD PSI	SUPPLY	DIFF VENT	COMP. DISCH	COMP. INLET H20	TURB VENT
		43^{30}	115^{25}	43^{30}	29.54	COMPLETED Daily INSPECTION OF ENGINE + STAND. ADD CYCLES ON																
40645	START 0925					850	826	40	13,719	6464	539	103	+6	35	160	528	260	13		42	-4.6	
40848	0945					Running Taxi cycles																
40881	0950					Engine cut out, Restarted and continued Taxi cycles																
40930	0955						1156	43	17006	13908	1151	865	8	67.5	147	1387	440	12		142.5	-27.5	
41130	1015						1120	43	16852	12279	1016	875	16	62.5	125	1308	440	12		134	-25.7	
	1045	44^{50}	116^{45}	44^{50}		Completed cycle #3, Start cycle #4 MADE 3 HR INSP OF GE																
41590	1055						1160	44	17062	13562	1122	865	11	66	160	1396	450	13		140	-27.3	
	STOP 1120	45^{25}	117^{20}	45^{25}		ENGINE CUT OUT WHILE ADJ GEAR BOX VIBRATION METER																
	START 1125	45^{25}	117^{20}	45^{25}		844 RESTARTED ENG AND CONTINUE RUN AT 90% NORMAL CONDITION																
42077	1140						1052	42	16556	12249	1012	721	12	58.5	120	115.6	400	13		122.5	-3.6	
	1200	46^{25}	118^{00}	46^{25}		Completed cycle #4 Start cycle #5																
42291	1210						1160	42	17057	13432	1127	855	11	66 MPD	157	1396	450	13		140	-4.1	
42677	1245						1066	43	16551	12222	1020	725	13	58.5	122	115.7	400	13		123	-3.6	
	1305	47^{10}	119^{05}	47^{10}		Completed cycle #5 Start cycle #6																
42997	1315						1160	49	16997	13602	1176 MPD	805	8	66	152	1368	440	13		138	-4.0	
43290	1345						1060	43	16565	12323	1019	725	12	58.5	128	115.6	400	12		122.5	-3.6	
	STOP 1400	MPD 48^{00}	MPD 119^{55} ~~120~~	MPD 48^{00}		Completed cycle #6 Stop for insp of gear box as per PoT 128 PT-89 DA																
	START 1525	Start Flight cycle #7				822	986	43	13161	5361	441	40	3	31	-	29.4	260	13		30	-.7	
43444	1555						1160	43	17031	14069	1166	910	7	66	152	1377	450	13		138	-4.1	
	1640	Star Flight cycle #8																				
43925	1645	49^{35}	121^{30}	49^{35}			1160	47	16961	14060	1162	789	4	64	85	134.9	440	13		136	25.8	
	1720	MPD 49^{55}	MPD 121^{50}	MPD 49^{55}			1010	44	16350	10245	889	721	13.5	54	68	1061	385	13		116	20.5	
	1740	49^{20}	121^{50} ~~122~~	~~59~~ ^{20}		completed cycle #8 start cycle #9																
44500	17^{50}						1155	45	16996	13923	1160	800	4	65	85	1380	450	13		138	26.3	

HAMILTON STANDARD 77.5 1/63

DAILY H.P. READING @ T.O.

E F Dowling 10-11-65

C 86260-5 PROP S/N N220566 DATE 10-4-65 SHEET NO. ~~1~~ 3

SERIES 1 NO. 260 108 ENGINEER D. LEISHMAN OPERATOR T. PURZYCKI

HELPERS F. JARVIS M. STAMBAUGH

FUEL PUMP NO. ____ PRESS. VALVE NO. ____ BLEED GOV. NO. ____ BLEED CONTROL NO. ____ COORD. NO. ____

		ENGINE PRESSURES					ENGINE OIL			GEAR BOX					PROP. PRESS				VIB. METERS			
-LD	SUPPLY	DIFF VENT	COMP. DISCH	COMP. INLET H2O	TURB VENT	FRONT COMP. VENT	#18 TEMP °F #19	MAIN PSI	MAIN PSI IN / OUT	LUBE PSI	SCAV PSI IN / OUT	LUBE TEST °F OF 15 IN / OUT 16	RPM LUBE FLOW	VENT	CONTROL IN	HI PITCH	LO PITCH	Pitch Lock	Engine 1 2 / 3 4	G/B 1 / 2	G/B 3 / 4	G/B 5 / 6
TAND. 400 CYCLES ON, 115 VOLTS., POWER ON. ADDED M 16 OZS. MIL-H 6083B TO PROP																						
0	13		42	-4.6			104 / 140	62	15 / 1.6	18	.8 / 14	94 / 89	27.8	0	11	10	115	220	1.7 .8 / .5 2.1	0 / 3.0	1.5 / 0	2.1 / 0
inued Taxi cycles																						
0	12		142.5	-27.5			192 / 255	58	12.5 / 28	67	.8 / 30	196 / 215	59.6	0	8	320	85	220	1.7 .8 / [illegible] 2.0	0 / 2.9	2.2 / 0	1.0 / 0
0	12		134	-25.7			200 / 257	55	12.5 / 2.5	52	.8 / 27	197 / 217	53.1	0	8	100	125	220	1.7 .6 / [illegible] 2.4	0 / 2.0	2.8 / 0	.5 / 0
MADE 3 HR INSP OF GEAR BOX AS PER POT* 128PT-89 PAR. 4.3.1 GEAR BOX OK																						
0	13		140	-27.3			201 / 260	56	12 / 2.8	63	.8 / 29	205 / 221	58.1	0	8	20	195	220	1.6 1 / 1 2.2	0 / 2.2	2.7 / 0	1.2 / 0
METER																						
ial CONDITION																						
0	13		122.5	-3.6			205 / 255	55	13.5 / 2.5	52	8 / 29	203 / 211	55.8	0	8	210	100	220	2 .6 / 1.2 2.3	0 / .3	.7 / 0	.2 / 0
0	13		140	-4.1			201 / 267	57	12 / 2.7	63	.8 / 29	200 / 210	57.8	0	7.5	25	135	220	1.9 .7 / 1.2 2	0 / .4	1.2 / 0	.2 / 0
0	13		123	-3.6			198 / 256		12 / 2.3	52	.8 / 27.5	207 / 215	52.6	0	8	130	115	220	1.8 .7 / 1.5 2.2	0 / .4	.6 / 0	.2 / .0
									~~12.5~~ / ~~2.65~~ A													
0	13		138	-4.0			205 / 251	58	12.5 / 2.65	66	.8 / 30	204 / 217	59.9	0	7	280	100	220	1.5 .7 / 1.2 2	0 / 1.2	2.5 / 0	4 / 0
0	12		122.5	-3.6			204 / 255	53	13 / 2.6	53	8 / 27	200 / 211	53.3	0	8	85	130	220	1.7 .7 / 1 2.2	0 / 1	2.3 / 0	.6 / 0
S PER POT 128PT-89 PAR 4.3.1 GEAR BOX OK																						
0	13		30	-.7			– / –	40	15 / 1.5	9 / ~~40~~	1.2 / 10	– / –	32.2	0	12	10	115	220	1.6 .6 / .4 2.3	0 / .1	.1 / 0	.5 / 0
0	13		138	-4.1			208 / 264	57	12.5 / 3	68	1.2 / 30	210 / 227	59.7	0	7	180	115	220	1.5 .7 / 1 1.8	.05 / .05	.25 / 0	0 / 0
	13		136	25.8			195 / 260	58	12 / 3	67	2.5 / 30	206 / 226	59.5	0	7	330	95	230	1.8 .7 / 1.2 2	.05 / .05	.5 / 0	.05 / 0
-	13		116	20.5			196 / 152	53	12.5 / 2.5	39	6 / 23	266 / 208	46.4	0	9	25	130	230	1.9 .9 / .9 2.4	.1 / .1	.1 / 0	.05 / 0
#9.																						
	13		138	26.3			208 / 263	58	12 / 3	68	2.8 / 29.5	207 / 225	59.2	0	7.5	270	100	230	1.5 .8 / 1.1 2.4	.05 / .65	.2 / 0	.05 / 0

-65

Witnessed [illegible] ROCASD 14 Oct 65 Witness 4 Oct 65 [illegible]

FUEL METER READING 96,319 @ 0800

TEST OF 50 HR. PART OF SH 56029 GEARBOX S/N104 VC862AD-5 PE
STAND E HOUSE WORK ORDER NO. 102-A05-100A ENGINE YT 64 SE
REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS
PROP. ASS'Y. NO. N 220566 HUB DESIGN NO. VC8620 BLADE DESIGN NO. FUEL CONTROL NO. FUEL PU

	TIME				ATM	TEMP.			POWER							FUEL			ENGINE	
	P.M.	TOTAL TEST	TOTAL ENGINE	TOTAL PROP.	TRUE BAR	MAX. T.I.T. °F	T.I.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	1.025 X TORQ. PSI	BLADE ∠	PLA	COND. LEVER	FLOW LBS/HR.	MANIFOLD PSI	SUPPLY	DIFF VENT	COMP DISCH
44816	18 20						1008	42	16319	11231	900	721	12.5	54	67	106.5	380	13		117
45023	18 40	HRD 50 55 51 20	122 35	HRD 50 55 51		End cycle #9 Start cycle #10														
45445	18 50						1156	43	16976	14092	1160	820	4	64	85	138.5	440	13		139
45425	19 20						1004	41	16318	10875	897	725	3	54	67	106.5	390	13		117
Corrected Time	19 30	51 46	123 46	51 45		Lunch, Repaired 0.1 in 6/10 Thermocouple														
Start	21 25					784	958	38	12877	5166	427	40	2	31	85	25.1	250	14		28
45551	21 30					continued last 10 Min of Flight Cycle #10.														
	21 40	52 30	123 25	52 30		End of Cycle #10 Start cycle #11														
45670	21 40						944	40	13243	5087	421	57	8	32	85	30.6	260	13		32
45716	21 45					Running Taxi cycles.														
45760	21 50						1160	40	16961	13891	1160	835	5	64	86	139.6	450	13		140
45815	21 55						1160	40	17079	14650	1161	848	6	66	86	142.9	450	13		143
45891	22 00						1150	38	17024	12285	1016	965	13	65	67	140.2	440	13		142
45969	22 10						1094	38	16664	11843	973	865	13	59	67	126.2	420	13		131
46082	22 20						1004	38	16262	10966	908	721	13	53	67	106.6	390	13		117
46182	22 30						828	37	13659	5385	462	107	12	34	67	28.3	260	13		40
						Completed One One Minute Reversal														
	22 40	HRD 53 00	124 25	HRD 53 00		Completed cycle #11 started cycle #12														
46377	22 50						1160	37	16887	13930	1160	824	5	62	86	138.1	440	13		138
46678	23 20						1004	37	16273	10892	903	725	13	54	67	106.6	390	13		117
46875	23 40	HRD 54 00	125 35	HRD 54 00		Completed Cycle #12 started cycle														
46986	23 50						1160	38	16878	13965	1160	830	4	63	85	138.6	450	13		140
	24 20						1002	36	16245	10990	910	721	12	53	67	106.8	390	13		117
47487	24 40	HRD 55 00	HRD 126 50	HRD 55 20		Stop. Completed #13 cycle.														

Witnes

DAILY H.P. READING @ T.O. Witness insp 10/4/65 Sosinski

E. F. Dowling
10-11-65

LOG OF 73EGBT GEAR BOX

HAMILTON STANDARD T-4 1/63

2A2-5 PROP S/N N 220566 DATE 10-4-65 SHEET NO. 4

SERIES 1 NO. 260108 ENGINEER D. LEISHMAN OPERATOR Gendron

HELPERS Schneider

FUEL PUMP NO. ______ PRESS. VALVE NO. ______ BLEED GOV. NO. ______ BLEED CONTROL NO. ______ COORD. NO. ______

	ENGINE PRESSURES					ENGINE OIL			GEAR BOX					PROP. PRESS				VIB. METERS				
SUPPLY	DIFF VENT	COMP. DISCH	COMP. INLET H2O	TURB VENT	FRONT COMP. VENT	#18 TEMP °F #19	MAIN PSI	MAIN PSI IN / OUT	LUBE PSI	SCAV PSI IN / OUT	LUBE TEST °F #15 IN / #16 OUT	QPM LUBE FLOW	VENT	CONTROL IN	HI PITCH	LO PITCH	Pitch Lock	Engine 1 / 3	Engine 2 / 4	G/B 1 / 2	G/B 3 / 4	G/B 5 / 6
13		117	-20.5			206 / 254	53	12.5 / 2.6	39	5.8 / 23	206 / 207	47	0	9	25	125	230	1.6 / 1.3	1 / 2.3	.1 / .1	.1 / 0	0 / 0
13		139	-26.6			196 / 260	58	12 / 3	68	2.4 / 30	205 / 227	59.5	0	8	300	110	230	1.5 / 1.0	.8 / 2.2	.05 / .05	.2 / 0	.05 / 0
13		117	-20.5			195 / 250	53	12.5 / 2.6	38	5.8 / 23	— / 208	47.2	0	9	25	130	230	1.6 / 1.7	.9 / 2.3	.1 / .1	.1 / 0	.05 / 0
cycle						159																
14		28	-2.6			174	44	16 / 1.5	8	12 / 8	154 / 127	22.7	0	12	15	120	230	1.5 / .6	.41 / 2	.2 / .2	.1 / 0	1.4 / 0
cle	#10.																					
13		32	-3.0			206 / 220	40	14 / 1.5	7	11.5 / 9	204 / 180	221	0	12	20	120	230	1.1 / .6	.4 / 2.0	.2 / .3	.2 / 0	.6 / 0
13		140	-26.6			~~208~~ / 260	67	12 / 3	67	2.7 / 30	210 / 227	59.4	0	7.5	320	110	230	[illegible] / 1.	1 / 2.5	.4 / .3	.2 / 0	.4 / 0
13		143	-22.6			205 / 258	69	12 / 3	67	2.5 / 29.5	263 / 225	57.3	0	7	310	105	230	1.2 / 1.4	.9 / 2.5	.4 / .3	.2 / 0	.4 / 0
13		142	-27.5			198 / 258	68	12 / 2.8	51	4 / 26	207 / 217	52.7	0	7 / ~~120~~	130	120	23	1.5 / 1.2	.9 / 2.5	.4 / .5	.6 / 0	.3 / 0
13		131	-24.5			206 / 254	66	12 / 2.8	48	4.5 / 25	205 / 210	50.7	0	8	30	130	230	1.2 / 1.2	.8 / 2.2	.5 / .5	.4 / 0	.2 / 0
13		117	-20.8			205 / 250	62	14.5 / 2.7	40	5.2 / 23.5	205 / 206	47.4	0	8	20	130	230	1.2 / 1	.9 / 2.3	.5 / .5	.5 / 0	.2 / 0
13		40	-4		234	200 / ~~[illegible]~~	45	13 / 1.8	8	13.5 / 10	205 / 195	23.3	0	12	20	120	230	1.2 / .9	.3 / 1.3	.2 / .5	.1 / 0	1.1 / 0
ycle	#12																					
13		138	-26.3			208 / 256	67	12 / ~~30~~	67	2.8 / 29	208 / 224	59.3	0	8	220	110	230	1.2 / 1.2	.8 / 2.1	.3 / .3	.2 / 0	.2 / 0
3		117	-20.6			191 / 249	63	12.5 / 2.6	40	5.5 / 23.5	207 / 207	47.1	0	9	20	130	230	1.6 / 1.7	.8 / 2.3	.7 / .6	.6 / 0	.2 / 0
Cycle #13																						
3		140	-26.4			208 / 256	67	12 / 3	68	3 / 29	207 / 222	59.5	0	8	350	110	230	1.6 / 1.2	.8 / 2.2	.3 / .4	.2 / 0	.4 / 0
1		117	-20.7			207 / 249	62	12.5 / 2.7	40	5.5 / 23.5	205 / 205	47.5	0	9	20	130	230	1.6 / 1.8	1 / 2.3	.6 / .3	.5 / 0	.3 / 0

Witness - R J Powers, DCASO, W.L. 10/4/65

FUEL METER READING

Cing

TEST OF 50 HR. PFRT OF SK56029 GEARBOX S/N 104 VC86260-5 PROP S/N N220

STAND E HOUSE WORK ORDER NO. 102-A05-100A ENGINE YT64 SERIES

REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS

PROP. ASS'Y. NO N220566 HUB DESIGN NO VC86260 BLADE DESIGN NO. FUEL CONTROL NO. FUEL PUMP NO.

LOG OF 73EGB1 GEAR BOX

	TIME				ATM	TEMP.			POWER							FUEL			ENGINE PRESSURES			
	A.M. P.M.	* TOTAL TEST	TOTAL ENGINE	TOTAL PROP.	TRUE BAR.	MAX. T.I.T. °F	T.I.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	1.025 x TORQ. PSI	BLADE ∡	P L A	COND. LEVER	FLOW LBS / HR.	MANI-FOLD PSI	SUPPLY	DIFF VENT	COMP. DISCH	COMP. INLET H_2O	TURB VENT
	0800	17^{15} 55^{30}	126^{60}	55^{30}	Completed daily inspection of engine - stand 400 cycles on 115 volt.																	
					Replaced aux motor refilled prop with oil Mil-H-6083B																	
	START 1425	cycle #14				812	964	41	12864	5131	427	40	3	31	—	330	260	14		29	-1.7	
	1435						1160	43	17043	14065	1166	830	8	66	147	1391	450	13		1398	-4.1	
47986	1505						1064	42	16574	12299	1015	730	14	58	124	1163	400	13		123	-3.9	
	1525	18^{15}	128^{50}	56^{00}	Completed cycle #14 start cycle #15														Witnessed			
	STOP 1540	18^{30}	128^{05}	56^{15}	Shut down for demonstration for P&W Eng.																	
	START 1555	18^{30}	128^{05}	56^{15}		830	970	42	13175	5398	447	40	5	31	148	339	260	14	—	30	-.6	—
	1610						1156	43	17034	14111	1152	810	7	66	156	1382	450	13	—	1385	4.2	—
48381	1640						1020	43	16362	10986	907	721	13	54	70	107.8	390	13	—	117	20.7	—
48600	1700	19^{35}	129^{10}	57^{20}	Completed cycle #15, Start cycle #16																	—
48601	1700						960	45	13236	5019	418	56	9	31	86	35	260	13.5	—	31	3.	—
48670	1705				Running Taxi Cycles																	
48692	1710						1158	45	16927	16331	1126	795	4	63	86	136.9	440	13	—	136	25.6	—
48785	1715						1160	45	15157	14065	1164	830	4	65	85	139.2	450	13	—	140	26.6	—
48806	1720						1160	43	14420	12401	1015	961	13	66	68	141.9	455	13	—	142	27.5	—
48898	1730						1108	42	13128	11982	985	870	13	60	68	128.3	425	13	—	132	24.5	—
49011	1740						1016	42	16344	10918	905	725	13	54	68	107.4	390	13	—	117	20.7	—
49102	1750						842	42	8437	5309	447	168	13	34	68	35.1	260	13	—	39	39	—
49143	1754				One 1 Minute Reversal.																	
49158	1755				Running 10 Taxi Cycles.														—			—
	STOP 1800	20^{35}	130^{10}	58^{20}	Navy Made Visual Insp. of Prop & Gearbox Witnessed																	
49200	START 1830	20^{35}	130^{10}	58^{20}		814	953	41	13138	5380	446	46	2	31	85	35	250	14	—	30	2.9	—
	1835				Start Flight cycle #17.														—			—
49368	1845	20^{50}	130^{25}	58^{35}			1154	41	16740	12608	1165	795	3	62	85	136.5	430	13	—	137	25.8	—

77.5

DAILY H.P. READING @ T.O. 50

* NOTE: TOTAL TEST TIME BROUGHT FOWARD ON 50 HR PFRT TEST. FROM PAGE #1 IN THIS COLUMN

Witness insp 10/5/65 Sosnicki

HAMILTON STANDARD

5 PROP S/N N220566 DATE 10-5-65 SHEET NO. 45 [270]

SERIES 1 NO. 200108 ENGINEER D. LEISHMAN OPERATOR Z. PIEZYCKI

HELPERS M. STAMBAUGH

FUEL PUMP NO. ____ PRESS. VALVE NO. ____ BLEED GOV. NO. ____ BLEED CONTROL NO. ____ COORD. NO. ____

SUPPLY	DIFF VENT	COMP. DISCH	COMP. INLET H2O	TURB VENT	FRONT COMP. VENT	#18 TEMP °F #19	MAIN PSI	MAIN PSI IN / OUT	LUBE PSI	SCAV PSI IN / OUT	LUBE TEST °F #15 IN / OUT #76	GPM LUBE FLOW	VENT	CONTROL IN	HI PITCH	LO PITCH	Pitch Lock	Engine 1 2 / 3 4	G/B 1 / 2	G/B 3 / 4	G/B 5 / 6
CYCLES ON 115 VOLTS ADDED 16 OZS OF OIL MIL-H-6083B TO PROP																					
H-6083B																					
14		29	-1.7			225 / 136	46	11.8 / 16		15 / 1.5	215 / 198	22.5	0	11	20	120	220	17 1.2 / 7 23	.3 / .7	.3 / 0	1.3 / 0
13		139.5	-4.1			203 / [illegible]	65	12 / 34	65	[illegible] / 34	200 / 216	59.3	0	7	350	100	220	16 .8 / 1 2	.3 / .5	.6 / .0	.4 / 0
13		123	-3.9			256 / [illegible]	64	12.5 / 2.8	51	3.7 / 26	209 / 214	52.9	0	8	110	125	220	17 .7 / .8 22	.4 / .3	.4 / 0	.2 / 0
Witnessed W. Howfelbert 10-5-65														Witnessed E. [illegible] DCASO 10/5/65							
14	—	30	-.6	—	—	201 / 211	33	16.5 / 1.5	8	12 / 8	200 / 171	23.5	0	12	20	120	220	13 .4 / .3 2.1	.1 / .2	.1 / 0	.5 / 0
13	—	138.5	4.2	—	—	210 / 263	56	12 / 2.9	66	8 / 29	210 / 225	59.8	0	7	130	125	220	1.4 .7 / 1 1.8	.5 / .4	.7 / 0	.3 / 0
13	—	117	20.7	—	—	200 / 260	52	12.5 / 2.6	40	5.5 / 23	195 / 205	47.3	0	9	20	130	225	18 .8 / 14 22	.4 / .5	.6 / .0	.2 / 0
				—			35	13.5 / 1.6													
13.5	—	31	3.	—	—	205 / 228	35	13.5 / 1.6	7	11.5 / 8.5	200 / 195	22	0	12	18	115	220	17 .4 / .3 21	.1 / .3	.2 / 0	.6 / 0
13	—	136	25.6	—	—	205 / 258	57	11.5 / 2.9	67	3 / 29	205 / 215	59.3	0	7.5	110	136	225	1.1 .8 / .8 2.1	.3 / .3	2.5 / 0	.2 / 0
13	—	140	26.6	—	—	209 / 263	57	11.5 / 2.9	67	2.6 / 29	205 / 226	59.2	0	7.5	265	110	230	1.7 .7 / .9 2.1	.3 / .3	.8 / 0	.4 / 0
13	—	142	27.5	—	—	205 / 260	57	11.5 / 2.8	51	4. / 25.2	200 / 215	53.1	0	8	128	125	225	1.5 .7 / .1 2.	.4 / .4	.6 / 0	.3 / 0
13	—	132	24.5	—	—	208 / 260	55	12 / 2.8	48	4.3 / 25	205 / 210	51.1	0	8.5	32	132	220	1.7 .7 / .7 23	.6 / .6	.5 / 0	.2 / 0
13	—	117	20.7	—	—	209 / 253	53	12.5 / 2.5	40	5.6 / 22.5	205 / 206	47.3	0	9	25	130	227	1.7 .8 / .7 23	.4 / .3	.5 / 0	.3 / 0
13	—	39	39	—	—	202 / 232	37	13 / 1.7	8	11.5 / 9.5	205 / 182	23	0	12	20	120	227	1.8 .2 / .4 1.6	.2 / .5	.2 / 0	1.0 / 0
	—			—	—																
GEARBOX Witnessed E. R. Robert [illegible]														E. F. Dowling 10-11-65							
14	—	30	2.9	—	—	205 / 214	40	16.5 / 1.5	7.5	12.5 / 8	200 / 170	23.1	0	12	20	115	230	14 .7 / .3 1.6	.1 / .7	.1 / 0	1.3 / 0
	—			—	—		66	12 / 2.9	68	3 / 29		59.7	0	7.5	275	105	230				
13	—	137	25.8	—	—	200 / 258	66	12 / 29	68	3 / 2.9	210 / 226	59.7	0	7.5	275	105	230	1.6 .7 / 1.0 20	.3 / .2	.9 / 0	.3 / 0

T TEST. FROM PAGE #1 TO BE CARRIED FORWARD

FUEL METER READING 98036 10-5-65 AM READING

[illegible signature]

TEST OF 50 Hr. PFRT. of SK56029 GEARBOX S/N 104 VC-86260-5 [illegible]
STAND E-House WORK ORDER NO. 102-A05-100A ENGINE YT-64 S[illegible]
REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS
PROP. ASS'Y. NO. K220566 HUB DESIGN NO. VC86260 BLADE DESIGN NO. FUEL CONTROL NO. FUEL P[illegible]

LOG OF 73EGB1 GEAR BOX

	TIME				ATM	TEMP.			POWER								FUEL			ENG	
	A.M. P.M.	TOTAL TEST	TOTAL ENGINE	TOTAL PROP.	THRUST BAR	MAX. T.I.T. °F	T.I.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	1025 # TORQ. PSI	BLADE ∡	P L A	COND. LEVER	FLOW LBS/HR.	MANI-FOLD PSI	SUPPLY	DIFF VENT	CO[illegible] DIS[illegible]
49650	1915						1004	39	16260	10890	901	721	13	53	67	106.3	385	13	—	11
	STOP 1935	21[illegible]	131 15	59 35		STOP FOR LUNCH - AWAITING RECALIBRATION OF														
	START 2100					[illegible]00	932	38	12958	5310	439	48	2	31	86	33.7	255	13.5	—	3
	2105	21 45	131 [illegible]	59 [illegible]		STARTING CYCLE #12														
50036	2115						1160	38	16978	14068	1163	810	3	62	86	138.	445	13	—	13
50348	2145	[illegible]	[illegible]	[illegible]			996	36	16227	10801	897	721	13	53	67	106.2	390	13	—	11
	STOP 2210	22	132	60		Low Pitch Press. was high on Sanborn - Had Sanbo[illegible]														
	START 0025					780	966	34	12996	6763	441	44	2	32	82	33	260	14	—	29.
	STOP 0030	22 [illegible]	132 [illegible]	60 [illegible]		SANBORN PRESS. OUT OF CAL., PROP. O.K.														

HAMILTON STANDARD

T-77.5 1/63

DAILY H.P. READING @ T.O.

6260-5 PROP S/N N220566

4 SERIES 1 NO 260108 DATE 10-5-65 SHEET NO. 6

ENGINEER D. LEISHMAN OPERATOR P. GENDRON

HELPERS P.A. BERTRAND

FUEL PUMP NO. ______ PRESS. VALVE NO. ______ BLEED GOV. NO. ______ BLEED CONTROL NO. ______ COORD. NO. ______

L		ENGINE PRESSURES					ENGINE OIL			GEAR BOX					PROP. PRESS				VIB. METERS				
-D	SUPPLY	DIFF VENT	COMP. DISCH	COMP. INLET H_2O	TURB VENT	FRONT COMP. VENT	#18 TEMP / #14	MAIN PSI	MAIN PSI IN / OUT	LUBE PSI	SCAV PSI IN / OUT	LUBE TEST OF #15 IN / #16 OUT	R.P.M. LUBE FLOW	VENT	CONTROL IN	HI PITCH	LO PITCH	Pitch Lock	Engine 1 / 3	Engine 2 / 4	G/B 1 / 2	G/B 3 / 4	G/B 5 / 6
5	13	—	117	20.5	—	—	207 / 250	62	12 / 2.5	40	5.5 / 2.5	204 / 205	47.1	0	8.5	25	—	220	1.6 / .9	1 / .23	.4 / .4	.3 / 0	.2 / 0
otion of Low Pitch Press. Gage. Complete Cycle #17.																							
5	13.5	—	30	2.8	—	—	202 / 209	34	6.5 / 1.4	8	12.7 / 8	148 / 160	23.1	0	12.5	20	112	230	1.1 / .6	.7 / 1.9	.2 / .4	.3 / 0	.8 / 0
5	13	—	138	26.0	—	—	[illegible] / [illegible]	56	12.5 / 2.8	68	3.1 / 29	208 / 225	59.4	0	7.5	290	110	228	1.7 / .0	.8 / .24	.3 / .3	.9 / 0	.4 / 0
0	13	—	117	20.5	—	—	207 / 251	52	12.5 / 2.5	39	5.8 / 23	206 / 206	46.6	0	9	22	—	228	1.6 / .7	1. / .25	.3 / .3	.4 / 0	.2 / 0
Had Sawhorn Cal. - Bent pointer on Low Pitch Press gage - had gage recal.																							
0	14	—	29.5	2.7	—	—	200 / 207	41	16 / 1.4	8.5	12.1 / 8.7	140 / 150	22.3	0	12.5	15	110	230	1.9 / .7	.7 / .27	.4 / .7	.4 / 0	1.5 / 0
OP. O.K.																							

E. H. [illegible]
10-11-65

FUEL METER READING

TEST OF 50 Hr. PFRT OF SK56029 GEARBOX S/N 104 VC 86260-5 PROP S
STAND E HOUSE WORK ORDER NO. 102 AOS 100 A ENGINE YT 64 S
REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS
PROP. ASS'Y. NO. V220566 HUB DESIGN NO. VC86260 BLADE DESIGN NO. FUEL CONTROL NO. FUEL P

LOG OF 73EGBT GEAR BOX

	TIME				ATM	TEMP.			POWER							FUEL			ENGI	
	A.M. P.M.	TOTAL TEST 22 35	TOTAL ENGINE 133 50	TOTAL PROP. 61 55	TRUE BAR	MAX. T.I.T. °F	T.I.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	1.025 X TORQ. PSI	BLADE ∡	P L A	COND. LEVER	FLOW LBS/HR.	MANI-FOLD PSI	SUPPLY PSIG	DIFF VENT	CO DISC
					29.85	Completed daily inspection of engine + stand.														4
0748	START 0855	START	cycle	* 19		796	960	36	12815	5124	427	48	+5	31	60	312	260	14		22
0838	0910						1154	38	17,012	14,078	1165	868	+9	66	156	1436	450	13		144
51028	0930						1048	38	16457	12369	1023	725	11	56	124	1157	400	13		123
51230	0945	START	cycle	* 20	5133	33	1154	40	16976	14032	1160	832	+9	64.5	150	1397	450	13		141
51745	1045		135 45				1050	40	16478	12259	1017	723	10	56	118	1152	400	13		123
	STOP 1050	24 50	~~134~~ 135 50	63 50		Completed F.I. cycle, Front G/B Chip detector														Shutdown
51923	START 1115					798	1000	64	13216	4668	385	47	✓	31	✓	316	260	14		29
52044	1125	START	cycle	* 21																
52193	1140						1154	46	17027	13238	1092	872	12	65	160	1383	450	13		138
52219	1150						1158	44	17032	12355	1019	935	12	63.5	118	1382	430	13		138
52372	1200						1130	48	16876	12336	1018	870	14	63	124	1310	420	13		134
52423	1210						1068	48	16591	12232	1015	730	10	58	118	1156	400	13		122
52642	1225	START	cycle	* 22			1		~~17020~~	~~14063~~	~~116~~					~~1350~~				
52815	1245						1160	49	17020	14063	1161	780	5	64.5	160	1350	440	13		136.5
53918	1310						1072	48	16591	12451	1030	715	10	58	155	1159	400	13		123
*	1335	START	cycle	* 23			1148	49	16897	13902	1160	746	5	63	160	1308	410	13		134.5
53871	1410						1078	49	16685	12278	1020	736	9	60	118	1174	400	13		123
	1425	START	cycle	* 24												Witnessed				
53838	1445						1160	51	17044	14135	1160	777	✓	66	✓	1361	440	13		136.5
54175	1510						1680	51	16689	12224	1012	732	✓	59	✓	1169	400	13		122
54469	1540	START	cycle	# 25			1156	54	17037	14012	1159	755	+5	66	160	1321	420	13		133
54781	1610	28 45	~~139~~ 45	68 45			1090	54	16731	12237	1015	740	12	60	121	1180	400	13		123
*	1625 ~~1625~~	~~29 00~~ 30 00	~~139~~ 140	69 00			START	cycle	# 26											
	NOTE:	Engine	Time +	Prop	Time				FROM	BEGINNING				OF	HCG	B				

T-77.5

HAMILTON STANDARD

DAILY H.P. READING @ T.O.

* Change paper in Bristol ran out.
* number stamping on Bristal after changing paper

-5 PROP S/N N 280566 DATE 10-6-65 SHEET NO. 7

SERIES 1 E-F NO. 260108 ENGINEER D. LEISHMAN OPERATOR T. FURZYCKI

HELPERS F. JARVIS

FUEL PUMP NO. PRESS. VALVE NO. BLEED GOV. NO. BLEED CONTROL NO. COORD. NO.

		ENGINE PRESSURES					ENGINE OIL			GEAR BOX					PROP. PRESS				VIB. METERS			
L D	SUPPLY PSIG	DIFF VENT	COMP. DISCH	COMP. INLET H2O	TURB VENT	FRONT COMP. VENT	#18 TEMP °F #19	MAIN PSI	MAIN PSI IN / OUT	LUBE PSI	SCAV PSI IN / OUT	LUBE TEST °F #15 IN / OUT #16	QPM LUBE FLOW	VENT	CONTROL IN	HI PITCH	LO PITCH	Pitch Lock	Engine 1 2 / 3 4	G/B 1 / 2	G/B 3 / 4	G/B 5 / 6
-STAND. 400 Cycles ON, 115 VOLTS POWER ON. ADDED 25 OZS. Mil-H 6083 TO PROP																						
2	14		29	-27			127 / 136	46	16 / 1.4	9.5	11.6 / 9	121 / 86	22.2	0	12	20	115	225	8 .5 / .5 12	.5 / 1.5	.7 / 0	2.6 / 0
5	13		144	-27.8			161 / 224	74	13 / 3.1	73	2.4 / 30	158 / 178	61.8	0	8	250	105	225	2.0 1.8 / 1.0 24	1.0 / 1.2	2.0 / 0	1.5 / 0
	13		123.5	-22.5			208 / 254	64	12 / 2.6	52	4.1 / 27	208 / 216	53.1	0	8	190	110	225	1.9 .8 / .8 24	1.2 / 1.4	1.7 / 0	.7 / 0
	13		141.5	-26.6			212 / 262	66	12 / 2.7	60	2.7 / 30	212 / 226	59.0	0	8	260	215	225	1.5 8 / 3 19	1.0 / 1.0	2.9 / 0	1.0 / 0
2	13		123	-22.1			211 / 256	62	12 / 2.6	51	4.3 / 27	211 / 216	52.7	0	8	200	14.5	220	1.6 9 / 1.5 23	1.2 / .9	1.8 / 0	.5 / 0
TOR SHUTDOWN CHECKED CHIP detector. FOUND O.K.																						
	14		29	-26			194 / 196	34	16.5 / 13	6	12.7 / 7	176 / 160	20.6	0	12	10	110	220	1.7 .5 / 8 20	.4 / 1.1	1.0 / 0	1.7 / 0
	13		138.5	-26.4			211 / 266	55	12.5 / 2.6	59	3.7 / 29	212 / 225	56.6	0	7	30	130	220	1.7 .9 / 1.4 23	1.0 / 1.2	2.2 / 0	.9 / 0
	13		138.5	-26.5			212 / 268	55	12.5 / 2.5	51	4.4 / 27	212 / 221	53.2	0	8	170	115	220	1.8 1.0 / 1.5 2.6	1.3 / 1.2	2.0 / 0	.8 / 0
	13		134	-25.0			211 / 265	54	13.0 / 2.6	50	4.5 / 28	211 / 221	53.1	0	8	105	135	220	1.8 8 / 2.0 25	1.5 / 1.2	2.0 / 0	.8 / 0
	13		122.5	-22.2			211 / 264	52	13.0 / 2.5	51	4.7 / 28	211 / 220	52.8	0	8	110	125	225	1.8 1.0 / 1.7 27	1.5 / 1.2	1.8 / 0	.6 / 0
	13		136.5	-25.5			215 / 269	55	12.5 / 2.8	66	2.8 / 30	215 / 235	59.5	0	7	170	10.5	225	1.9 .7 / 1.5 22	.9 / .8	2.2 / 0	.6 / 0
	13		123	-22.1			220 / 261	53	13 / 2.7	52	4.3 / 27	212 / 215	53.5	0	8	240	9.5	225	1.9 8 / 1.7 25	1.3 / 1.4	1.8 / 0	.5 / 0
	13		134.5	-24.4				55	13 / 2.7	66	3 / 29		59.3	0	8	75	130	225	1.7 .7 / 1.0 20	1.0 / .8	2.8 / 0	.7 / 0
	13		123	-22.5			212 / 262	53	13 / 2.6	51	4.4 / 27	212 / 220	52.9	0	8	200	85	220	2.0 8 / 1.0 25	1.4 / 1.7	2.6 / 0	.8 / 0
Witnessed [illegible] 10-6-65														Witnessed E. [illegible] DCASO								
	13		136.5	-25.5			216 / 270	55	12.5 / 2.8	66	2.8 / 30	216 / 236	59.7	0	7	250	95	220	1.8 .7 / 1.0 19	[illegible] / 1.2	[illegible] / 0	.8 / 0
	13		122	-22.1			212 / 262	53	13 / 2.8	50	4.4 / 27	212 / 220	52.6	0	8	60	125	225	2.0 .8 / 9 16	.5 / 1.2	1.5 / 0	.5 / 0
	13		133	-24.8			215 / 270	55	12.5 / 2.8	65.5	2.7 / 30	215 / 234	59.2	0	7	110	125	225	1.7 .8 / 1.0 22	.8 / .1	2.3 / 0	.7 / 0
	13		123	-22.5			212 / 264	53	13 / 2.6	50	4.3 / 28	212 / 221	52.6	0	8	290	90	220	1.9 .7 / 1.5 25	1.2 / 1.3	2.2 / 0	.6 / 0

E LOG BOOKS ARE CORRECTED ON THIS SHEET

E. F. Dowling
10-11-65

FUEL METER READING 98852

in 9 paper

TEST OF 50 HR. PFRT OF SK56029 GEAR BOX S/N 104 VC 86260-5

STAND E HOUSE WORK ORDER NO. 102 A05 100A ENGINE YT64 SERIES

REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS

PROP. ASS'Y. NO N220566 HUB DESIGN NO. VC86260 BLADE DESIGN NO. FUEL CONTROL NO. FUEL PUMP NO.

LOG OF 73EGB1 GEAR BOX

	TIME				ATM	TEMP.			POWER							FUEL			ENGINE PRESSU		
	A.M. P.M.	29^{00} TOTAL TEST	138.55 TOTAL ENGINE	69^{00} TOTAL PROP.	THRUST BAR	MAX. T.I.T. °F	T.I.T. °F	COMP. INLET °F #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	1.025 X TORQ. PSI	BLADE ∡	P L A	COND. LEVER	FLOW LBS / HR.	MANI-FOLD PSI	SUPPLY PSI	DIFF VENT	COMP. DISCH	COMP. INLET H2O
55034	1635						1159	54	16930	14033	1162	730	1	64	86	1306	425	13	—	131	24.3
55275	1705						1048	52	16519	11106	920	725	12	56	61	109.3	395	13	—	117	20.8
	STOP 1725	30^{00}	140^{55}	70^{00}					MADE VISUAL INSPECTION OF GEAR BOX - CHECK												
	START 1735	30^{00}	140^{55}	70^{00}					START CYCLE #27.												
55475	1736						1002	52	15282	5433	450	42	2	31	86	34.1	260	14	—	30	2.8
5556	1745						1156	52	16980	14046	1164	745	2	64	86	132.	430	13	—	132	24.7
5850	1815						1044	50	16486	11206	930	721	12	56	67	109.8	390	13	—	117	20.7
	1835	32^{00}	142^{55}	71^{00}					COMPLETE CYCLE #27, START CYCLE #28.												
6155	1845						1158	50	16939	13968	1156	756	3	64	86	132.	420	13	—	133	24.6
56509	1920						1042	48	16480	11217	930	722	12	56	67	110.1	395	13	—	118	21.
	1935	33^{00}	143^{55}	72^{00}					COMPLETE CYCLE #28. START CYCLE #29.												
56750	1945						1158	50	16977	14110	1166	765	2	64	86	1338	440	13	—	134	25.0
57086	2015						1042	48	16503	11240	930	721	12	57	67	1101	390	13	—	118.	21.0
	2035	34^{00}	144^{55}	73^{00}			97		COMPLETE CYCLE #29 START CYCLE #30												
57265	2035						970	48	13332	4974	412	58	10	32	85	335	260	13	—	31.	3.1
57318	2040								Running TAXI cycles												
57360	2045						1156	50	16967	13960	1157	770	3	64	85	1346	425	13	—	134	25
57418	2050						1160	48	16999	14029	1161	785	3	65	85	1349	440	13	—	136	25.4
57461	2055						1160	48	17042	12241	1015	915	12	66	67	1362	445	13	—	137	25.8
57560	2105						1130	46	16858	11963	989	865	12	62	67	1300	425	13	-	132	24.6
57665	2115						1036	47	16332	11050	913	721	12	55	67	1085	390	13	—	117	20.5
57752	2125						852	45	13790	5405	448	115	12	35	67	360	260	13	—	40	4.1
57780	2129								ONE MINUTE REVERSAL												
	2130								RUNNING TAXI CYCLES.												
	2135	35^{00}	145^{55}	74^{00}					COMPLETE CYCLE #30, START CYCLE #31.												

HAMILTON STANDARD

T-77.5 1/60

DAILY H.P. READING @ T.O. Witness insp 10/6/65 Sosnecki

-60-5 PROP S/N 220566 DATE 10-6-65 SHEET NO. 8

SERIES 1 NO. E-E260108 ENGINEER D. LEISHMAN OPERATOR P. GENDRON

HELPERS P. A. BERTRAND

PUMP NO. ______ PRESS. VALVE NO. ______ BLEED GOV. NO. ______ BLEED CONTROL NO. ______ COORD. NO. ______

ENGINE PRESSURES				ENGINE OIL			GEAR BOX					PROP. PRESS				VIB. METERS				
COMP. DISCH	COMP. INLET H2O	TURB VENT	FRONT COMP. VENT	#18 TEMP °F #19	MAIN PSI	MAIN PSI IN / OUT	LUBE PSI	SCAV PSI IN / OUT	LUBE TEST °F #15 IN / OUT #16	PPM LUBE FLOW	VENT	CONTROL IN	HI PITCH	LO PITCH	Pitch Lock	Engine 1 / 3	Engine 2 / 4	G/B 1 / 2	G/B 3 / 4	G/B 5 / 6
131	24.3	—	—	210 / 264	56	12.5 / 2.8	67	3.1 / 29.5	210 / 227	59.8	0	8	190	107	228	1.8 / 1.5	.9 / 2.2	.3 / .3	.7 / 0	.3 / 0
117	20.8	—	—	212 / 261	52	12.5 / 2.4	40	5.3 / 24.5	212 / 213	47.7	0	8.7	28	125	225	1.7 / .9	1.0 / 2.7	.5 / .6	.7 / 0	.3 / 0
Checked out A.O.K. Complete Cycle #26																				
130	2.8	—	—	205 / 221	36	15. / 1.4	8	12.5 / 8.8	203 / 185	23.4	0	12.5	18	110	225	3 / 3	.3 / 1.9	.1 / .4	.1 / 0	.7 / 0
132	24.7	—	—	208 / 263	56	12 / 2.8	68	3.2 / 29.9	209 / 225	59.6	0	7.8	295	105	228	1.7 / 1.3	1.1 / 2.2	.3 / .3	1. / 0	.2 / 0
117	20.7	—	—	212 / 260	52	12.5 / 2.4	41	5.3 / 24	210 / 215	482	0	8.5	25	127	215	1.7 / 1.1	.9 / 2.5	.4 / .3	.3 / 0	.3 / 0
28.																				
133	24.6	—	—	209 / 262	56	12.5 / 2.7	67	3.4 / 30	209 / 225	59.6	0	8	115	135 ~~110~~	226	1.7 / 1.4	.1 / 2.3	.3 / .3	1. / 0	.3 / 0
118	21.	—	—	211 / 260	53	12.5 / 2.5	41	5.2 / 24.5	211 / 216	483	0	8.5	28	130	226	1.7 / 1.1	1. / 2.1	.4 / .7	.6 / 0	.3 / 0
#29.																				
134	25.0	—	—	208 / 263	56	12 / 2.8	68	3.1 / 29.5	209 / 226	598	0	8	250	105	229	1.7 / 1.4	1. / 2.2	.3 / .2	.8 / 0	.2 / 0
118.	21.0	—	—	210 / 260	52.	13 / 2.5	43	5.2 / 24.5	210 / 214	485 / [illegible]	0	8.5	30	125	225	1.7 / 1.1	.9 / 2.5	.5 / .6	.4 / .0	.3 / .0
E #30					TOR 34	~~[illegible]~~				TOR ~~217~~										
131.	3.1	—	—	209 / 261	34	15 / 1.5	65	11.8 / 9	209 / 195	217	0	5	20	110	225	1.4 / .5	.5 / 1.1	.1 / .5	.2 / .0	1.0 / 0
134	25	—	—	208 / 262	55	12 / 2.8	65.5	2.75 / 30	208 / 225	596	0	7.5	270	105	230	1.7 / 1.1	2.9 / 2.5	.3 / .3	.8 / .0	.3 / 0
136	25.4	—	—	214 / 267	55	12 / 2.8	65	2.5 / 29.5	214 / 232	590.	0	7.	310	100	225	1.7 / 2.1	.8 / 2.1	.3 / .3	1.3 / 0	.3 / 0
137	25.8	—	—	214 / 268	56	12.5 / 2.6	50	4 / 26	214 / 236	525	0	8	410	125	220	1.6 / 1.5	.8 / 2.4	.4 / .6	.6 / .0	.2 / 0
132	24.6	—	—	212 / 265	55	12 / 2.6	48	4.3 / 26	212 / 220	515	0	8 / ~~45~~	45	125	220	1.6 / 1.7	.9 / 2.7	.4 / .5	.6 / 0	.3 / 0
117	20.5	—	—	212 / 260	52	12.8 / 2.5	40	5.3 / 24	~~5.3~~ 214 / 214	476	0	8.5	30	12.5	210	1.7 / 1.2	1.0 / 2.4	.6 / .7	.5 / 0	.2 / 0
110	4.1	—	—	210 / 284	38	14.5 / 1.6	8.5	11.3 / 10.2	207 / 193	234	0	11.5	20	125	225	1.9 / .4	.3 / 1.8	.2 / .7	.2 / 0	.1 / 0

#31. 10-11-65 [signature]

FUEL METER READING

TEST OF 50 HR PERF. of SK 56029 GEARBOX S/N 10A VC86260-5 P…
STAND E House WORK ORDER NO. 102-A05-100A ENGINE YT 6A SE…
REDUCTION 12.08:1 CONSTANT .5252 SPECIAL PARTS
PROP. ASS'Y. NO. N220566 HUB DESIGN NO. VC86260 BLADE DESIGN NO. FUEL CONTROL NO. FUEL PUM…

LOG OF 73EGB1 GEAR BOX

	TIME				ATM	TEMP.			POWER							FUEL			ENGINE	
	A.M. P.M.	TOTAL TEST	TOTAL ENGINE	TOTAL PROP.	TRUE BAR.	MAX. T.I.T. °F	T.I.T. °F	COMP. INLET #3	GAS Producer RPM	POWER Turbine RPM	PROP RPM	1025 X TORQ. PSI	BLADE ∡	P L A	COND. LEVER	FLOW LBS / HR.	MANI-FOLD PSI	SUPPLY PSI	DIFF VENT	COMP. DISCH
	2135	35^{00}	145^{55}	74^{00}																
57961	2145				29.82		1160	47	16912	14046	1163	760	2	63	86	1333	440	13	—	134…
58258	2215						1024	44	16377	10968	910	721	12	54	66.5	1082	395	13	—	117…
	2235	36^{00}	146^{55}	75^{00}			Complete cycles #31, Start cycle #32.													
58565	2245						1160	46	16980	14014	1161	795	3	65	85	1363	440	13	—	136…
58856	2315						1010	42	16341	10884	905	721	12	54	67	1072	390	13	—	117…
59050	2335	37^{00}	147^{55}	76^{00}					End cycle #32, Start cycle #33.											
59160	2345						1156	42	16847	13953	1155	800	4	62	86	1353	430	13	—	136…
59450	0015						1020	40	16341	11118	918	721	12	54	67	1087	390	13	—	117…
	STOP 0035	38^{00}	148^{55}	77^{00}					Complete cycle #33. End of shift.											
		38^{00}	148^{55}	77^{00}																

Witness insp 10/6/6[illegible] [illegible]

HAMILTON STANDARD

T-77.5 1/63

DAILY H.P. READING @ T.O.